

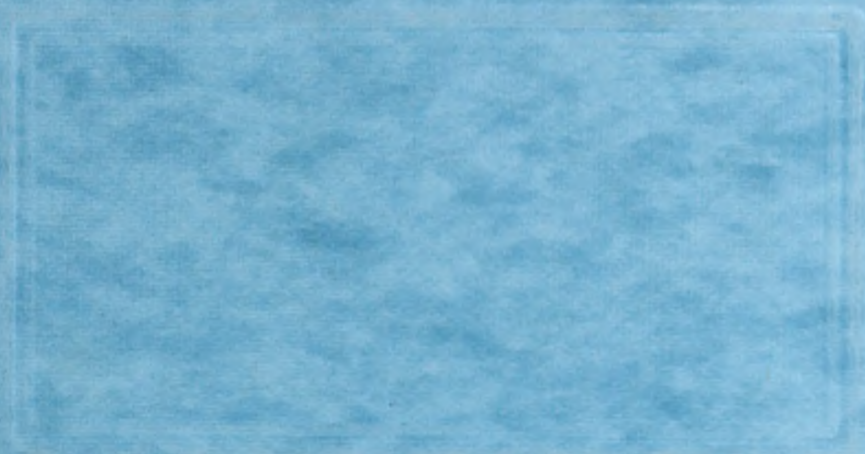
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MONTANA TELECOMMUNICATIONS PROJECT

REPORT SUMMARY

TELEPHONY

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State government leases an extensive network of switching systems throughout Montana, paying approximately \$2.2 million for nineteen switches serving about 8,700 lines and 10,200 telephones (as of July, 1981). Equipment leased from common carriers (primarily Mountain Bell) is subject to cost increases beyond the control of the person or organization leasing it. Rates are approved by either the Montana Public Service Commission or Federal Communications Commission in the form of tariffs. Applications for tariff increases are becoming more frequent in Montana. The result of tariff increases, of course, is a higher cost to the user. The state cannot effectively budget for and control its communications costs as long as it depends on equipment subject to on-going tariff increases.

Between 1968 and 1979 Mountain Bell recieved no tariff increases. Since that time, three tariff increases have been requested by Mountain Bell to compensate for increased costs of doing business. The Bell system has verified that basic telephone service in Montana could quadruple by 1990. As a basic management decision, the state would do well to remove itself from an ever-increasing tariff situation as regards its telephone network.

One means of minimizing the impact of tariff increases, and maximizing budget control, is through fixed lease prices for switches, or outright purchase. Equipment and service would be acquired through a competitive bidding process.

The state issued a request for quotation (RFQ) to achieve that price stabilization in 1980. For a variety of reasons, however, the RFQ and the responses to it proved confusing. A new RFQ is presently being designed for the replacement of major switches in Missoula, Helena, Bozeman and Billings.

The state should pursue an RFQ policy which would include the stipulation of fixed capital equipment costs, compensation for vendor non-performance, the capability of the switch to account for line and set assignments (to insure proper billing), user programability (to reduce vendor labor costs), and "queued" system trunks (to better utilize long distance line capabilities).

An RFQ service/equipment contract should cover a ten year term. Costs would be known for that period. The assumption is that the costs of equipment and services contractually specified now will be significantly less than ten years from now.

The funding and management of the switching system is fragmented. Only two of 19 switches are directly administered by the Department of Administration. The remaining 17 are administered and funded through other agencies

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or institutions of higher education. The persons responsible for the switches view management problems with the present telephone system as fairly serious for the majority of users, and getting worse. Escalating cost, inadequate capability, lack of cable, incorrect billings, and poor turnaround time on orders were cited as the most vexing problems in order of severity.

The Telecommunications Project interviewed 19 agency heads and mail surveyed five hundred randomly selected state employees (42% return). Again, escalating costs were "very frequent" telephone problems. Other problems perceived by switch managers were not as frequently mentioned. Switch managers and key agency heads, however, both agreed (58% and 59% respectively) present systems are adequate for no more than three years. A high percentage of both groups also cited problems with accessing state WATS lines. Randomly selected state employees cited escalating costs and "system busy" as significant problems with telephone service. Interestingly, 59% (the same as switch managers and agency heads) viewed new systems as necessary within three years.


Projections for systems growth indicate a steady increase. Dial-up computer ports are expected to increase at the rate of 5% - 7% per annum. Two way trunks (dial-in, dial-out) are expected to increase at the rate of 4% per year over the forthcoming five years.

In pursuing switch replacements the state will also face the problem of whether a single vendor should be used or whether each switch should be let to the best bidder. Only the four major switches out of 19 are scheduled for replacement. A single vendor has advantages in terms of both systems compatibility and leverage for assuring maintenance performance. Multiple vendors assure competition among hardware and service providers on a switch by switch basis, but may present administrative problems in the coordination of repair, maintenance and systems upgrading.

The state government suffers from a severe lack of expertise in the telephony field. Switch managers are usually financial officers or physical plant managers untrained in telephony. The state Communications Division has only one position assigned to the telephone system. This lack of expertise has unavoidably led to poor switching system design, which has led to poor service to users, which in turn has led to pressure to upgrade the systems. The level of expertise, as well as an integrated management structure, should be implemented within the Communications Division.

The state should develop a standard RFQ format for switching systems. The basic contractual portions of the RFQ developed for the four main switches should be retained and applied whenever a switch replacement is required, changing only the system specifications to tailor-fit the switch in question.

The state should also consider a more comprehensive use of the state



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telephone system for voice grade services. The system could serve as a temporary "backbone" system for non-broad band technologies such as teleconferencing, FAX, or slow scan video.

LAND MOBILE RADIO

Land mobile radios proliferate throughout the state of Montana. The Project, as directed by its Grant, has completed a general inventory of land mobile equipment in the State, from state agency to county level, including university and college level equipment. The inventory shows that the state agencies, along with the colleges and universities, possess over fourteen hundred radios, with nearly one hundred transmitting sites. There are an estimated five thousand five hundred publicly owned radios in operation statewide.

Exact levels of funding spent on land mobile systems in the state were unavailable. However, the Project has estimated the total annual operating expenditures concerning land mobile system operations to be approximately \$1,500,000 (excluding personnel costs). Approximately \$4,000,000 is currently invested in existing capital equipment. The Department of Highways investment in existing land mobile equipment as of September, 1980, was \$633,023, including depreciation.

Insofar as the ratio of the Department of Highways mobile units (870) to the extrapolated state total mobile units (5500) is roughly 15.75%, this ratio was used to extrapolate costs statewide.

The Project has completed methodologies for the State to take equipment inventories and complete statewide needs assessments for land mobile users. These methodologies were field-tested by the Project in Beaverhead County.

These are obviously lengthy and complex efforts and illustrate the difficulty of ascertaining the detailed situation regarding land mobile radio in Montana. The State should computerize inventory material in a volatile data base format for utilization in the future.

The methodology pilot projects revealed a number of facts concerning the land mobile situation in Montana. First, ascertaining an accurate, detailed picture of needs and equipment as completely as the county/local level will be an expensive process. An extrapolation of the costs for the Beaverhead County needs assessment, which is a relatively small and straightforward land mobile operational scenario, provides an estimate of roughly \$100,000. The cost of the physical equipment inventory for all fifty-six counties, is an estimated \$150,000. Second, an extensive survey would consume such a large amount of time (six-twelve months) that, unless the data that it established were acted upon extremely quickly, it could easily become outdated within a matter of months. Third, the situation would not be satisfied by a one-time, "snap-shot" approach to the problem. The fourth fact revealed

by the pilot tests concerns the notion that the local level land mobile users, such as sheriffs, have an obvious need to coordinate with state-level users such as the Department of Livestock and the Highway Patrol. The local operations are not bound to cooperate with the State. This presents particular difficulties in the control of equipment procurement, for instance; wherein a sheriff can purchase a system on any frequency band desired, without regard as to its compatibility with any other agency.

In a survey of user agencies, seventy-one percent of all respondents were on the VHF-low band frequencies, twenty-one percent were on VHF-high band, and approximately eight percent were utilizing a combination of the two frequency assignments. Overwhelmingly, (90% of respondents) the most common operational difficulty cited by the task force respondents was skip interference.

Miscellaneous comments resulting from the General Needs Assessments included the following: "We need a uniform statewide system", "we are presently unable to communicate with many other agencies", "we would like to go to high-band", and "lack of statewide planning has prohibited our system's expansion."

Several issues were identified as pertinent by the Project and the Land Mobile Task Force. Predominant among these issues by far is the fact that state agency systems utilizing "low-band" systems, (e.g., frequencies between 30.56 and 49.6 MHz) suffer from intermittent skip interference upon their systems. This interference, which is a naturally occurring phenomenon resulting from triangulation of radio-frequency broadcast propagation patterns involving ionospheric conditions (and, therefore, dependent to a degree upon cyclical sun-spot levels), can become so severe as to prevent effective services communications. There exists a sizable segment of the land mobile user community which believes that the answer to this difficulty lies in a simple frequency shift to "high-band" (150.8 to 162.0125 MHz). The Project has received conflicting information on this point: some high-band users state that they experience little or no interference, while others note that they receive considerable interference, usually from relatively close locations, such as northern Wyoming or southern Alberta.

Another issue of concern to land mobile users is that frequency coordination among different users is poor. The difficulty is that since the radios are on different frequencies, they cannot communicate with each other. The advantages to a unified, centralized frequency plan are obvious: The largest one of course, is that agencies and organizations could communicate directly with each other. The answer to this difficulty, in the Project's opinion, involves far-reaching changes in the statewide communications management framework. An associated issue to the concept of poor frequency coordination is the fact that there presently exists few "party-line" frequencies for statewide use. This is a separate design scenario than the notion of a coordinated statewide frequency plan: It is a specific idea to refine the coordinated plan even further. It may, however, require substantial replacement costs of radios from one-channel to two-channel models. This is, in the Project's opinion, best further explored under the resources of HB827.

As regards the last remaining issue, that of site management and site sharing, the Project felt that the developed physical inventory methodology could also go a long way toward contributing information to assist in a solution of the problem. In addition, the Project has informally broached the idea of site sharing with the federal government and feels that this should be pursued as well with local governments.

Facilities projections for land mobile equipment were extremely difficult to obtain, for a variety of reasons. If one is willing to predict statewide patterns from Highway Department information it is safe to say that land mobile in Montana will experience steady growth through the next five years. Transmitting sites should increase roughly 13%, with a 25% increase of transmitting towers located on those sites. Base stations are expected to rise on the order of 11%, while antennas and control points are expected to rise by 6% each at the end of the five year period. Emergency power equipment should rise roughly 14%. Perhaps most significantly, the number of radios themselves will increase dramatically. Mobile units may increase 28% within the next five years, while portable radios (hand-helds) may increase a notable 46%.

The trend in land mobile is clear: this facet of telecommunications in Montana will become increasingly more and more important as systems and the services provided by the agencies using these systems proliferate. If the state does not control and provide coordination of this valuable communications resource the situation will continue as it is: a multiplicity of users, each with their own frequency segment, suffering from interference, unable to communicate with each other, and providing less than optimum service to the general public as a result of this uncontrolled and uncoordinated framework.

DATA COMMUNICATIONS

In keeping with Project goals in the area of data communications, the Project worked extensively with the Data Communications Task Force (see attachment one), the Computer Services Division (CSD) within the State Department of Administration, and the Institute for Telecommunications Sciences (ITS) within the U.S. Department of Commerce.

Precise equipment level ascertainment for all organizational entities involved in data communications was far beyond the scope of the Project. A general overview of the state agency equipment was developed by CSD. The available information does not reflect data communication equipment at educational institutions within the state to any degree of detail, nor does it show equipment located at the city or county level. However, it does provide an adequate conception of the most extensive network in the State and reflects the location of approximately 60% of existing equipment. State government currently (as of March, 1981) possesses 4 distributive processors, 27 remote job entry terminals and 357 terminals, for a total of 388 devices; this extrapolates to roughly 650 data processing/communicating devices statewide.

The Project developed a methodology for the State to ascertain data

communications equipment levels with a fair degree of precision. The methodology allows the State to obtain a detailed overview of its data communications equipment, including facsimile machines, teletypes, circuits, modems, and any other input/output devices. The methodology will allow the State to discern data communication networking patterns and lower the cost of data communications within the State if at all possible.

The Project conducted a needs assessment for data communications users in the State. One of the issues facing data communications personnel in the State is the concept of local distribution costs. Data communication at the local level is accomplished by the leasing of circuitry from common carriers. There appears to be only one alternative to this, and that is for the user to wire the site themselves. At the time of this writing, Eastern Montana College has completed an on-site wired network; MSU is in the process of doing so, and Northern Montana College is considering doing so.

Another issue is the fact that many users have a requirement for unloaded multi-point circuits. An unloaded circuit is a circuit that has had its loading coils removed, and therefore allows data to be transmitted over it at a rate higher than usual (9,600 BITS per second versus 2,400 BITS per second, for instance). A multipoint circuit is a circuit that connects more than one point to reception. This issue refers to State needs to transmit data very quickly to more than one location.

A major issue in data communications revolves around the difficulty of protocol incompatibilities between various terminals and various other central processors. This issue stems basically from the fact that IBM central processors and terminals "speak a language" known as SNA. Other manufacturers of data processing equipment, such as DEC and WANG, "speak a language" known as X.25. These two protocols differ enough so that communication between an X.25 terminal and an SNA processor is extremely difficult, perhaps to the point of total non-communication.

The solution is to have terminals and processors all "speaking the same language" in order to utilize the State's data communicating and data processing capabilities to the fullest. There are two ways to accomplish this. The first is to control the procurement of all new data transmitting devices. This option presents problems insofar as the split in data communication organizations lies between the state agencies, the educational institutions, and local governments. The Project has estimated that a time-frame of approximately fifteen years would be required before the final phase-out of "old protocol" equipment could be completed. This scenario also tends to leave "old protocol" equipment gradually more and more out of the data communication picture as "new protocol" equipment levels increase.

The second option to resolve the issue of incompatible protocols is to allow the marketplace to solve the difficulty for the State. IBM, the creator of SNA, is currently proposing a shift to the X.25 protocol. This shift is expected to take place within the next three years, therefore, the protocol incompatibility issue may resolve itself. There appears to be user pressure worldwide to motivate manufacturers to work together to solve this problem.

Another major issue confronting data communications users is the lack of a coordinating body as regards data communications problems and difficulties. It is perhaps significant that the data communications users perceive the need for an overall coordinating body; this is the first step toward bringing order to the situation. There are, again, two ways to solve this problem. The first is to establish a steering committee comprised of the various user groups. Difficulties inherent in this approach include the fact that members of the steering committee may be expected to represent their own interests, and that getting a committee to agree on a single course of action contrary to the interests of individual members of the committee can be difficult. The second method available to resolve this problem is the creation of a centralized management structure. A "centralized approach" individual must consider the needs of the users in order to function adequately.

The two remaining issues of concern to data communications users closely paralleled the Project's grant requirements of establishing a general inventory. These two issues were the completion of a physical inventory of data communication equipment and identification of the existing user groups. The Project feels that both of these can be accomplished through the use of the physical equipment inventory form provided. The physical inventory should be accomplished under the auspices of HB827 and should coordinate closely with the Computer Services Division to avoid duplication; it should also identify and utilize any other data bases and devise and institute a volatile data base for the equipment inventory. The completion of an inventory should also identify the user community.

The Project and the Institute for Telecommunication Sciences developed a needs assessment methodology for data communication users. The methodology proved to be unwieldy in many respects and was redone by the Project pursuant to input from the Data Communications Task Force and the Computer Service Division. The Project feels that the revised methodology for determining needs would provide the State with a much more detailed picture of data communications.

Insofar as future needs projections are concerned, the Project relied heavily upon Computer Services Division's figures, since they provided estimates encompassing all agencies attached to the host processor at Helena. CSD expects input/output (I/O) terminals to increase 250 percent between 1981 and 1985, from 400 devices to 1000 devices. Batch transmission terminals are expected to increase 240 percent from 25 devices in 1981 to 60 devices in 1985. Modems will show a similar increase of 250 percent, from 200 to 500. Concentrators are expected to increase from their present level of none to five devices over the same time frame. Both dedicated and dial-up circuits show similar trends of expected rapid growth, as do message switchers. The user community, in keeping with the equipment trends is also expected to increase approximately 50% from roughly forty user groups at present to sixty groups within five years. The level of growth in the data communications - roughly 200 percent - will also be shared by the educational and local government sectors.

CSD estimates an expenditure at present of roughly \$670,000 per annum in lease costs of lines, modems, controllers, and terminals. This cost is expected to rise sharply within the next two years, to an estimated level of \$2,370,000, due to system expansions and increased lease costs. The increase (roughly 350%) can, according to CSD estimates, be reduced on the

order of 30-40% of the 1983 total cost simply by employing the long-range planning techniques postulated by the Project; such as resolution of protocol incompatibilities, avoidance of redundant equipment, and avoidance of redundant circuitry.

VIDEO AND PUBLIC TELEVISION

Montana is one of two states not having an in-state PTV broadcasting facility. While the vast majority of Montana's geography is not served by any form of PTV, a slight majority lives in areas receiving out-of-state Public Broadcasting Service (PBS) programming from KUED in Salt Lake and KSPS in Spokane. The programming is provided by some cable TV companies for a monthly fee. Libby is served by a "free" translator service, the only PTV translator in the state.

Federal regulations controlling the delivery of cable TV signals are in a state of change. The FCC has permitted telephone companies to provide cable service in areas in violation of a previously adopted rule. Rural Electrification Administration (REA) funds have been made available to telephone companies in areas too unprofitable for commercial cable companies. Also, the FCC has removed its prohibition against cable companies owning low power transmitters.

Cable TV programming is provided by two specialized common carriers. Western Microwave serves the I-90 corridor, Helena and Great Falls with a variety of programming, including KUED in Salt Lake.

Intermountain Microwave (Teleprompter) serves the High Line area, Missoula and Great Falls. KSPS programming from Spokane's PTV station is not carried along the High Line east of the divide, although plans to do so are in the works.

There are 49 known CATV systems operating in Montana. All 49 cable companies have undergone major expansion, or will within one year. The majority of the CATV systems employ Western Satellite (WESTAR) reception (42%). Microwave links account for 35% of CATV feeds. By industry counts, there are 126,356 households presently receiving cable TV, 72% of which receive PBS.

The Telecommunications Project contracted for an assessment of video equipment holdings, use, and applications in state government, the university system and the private sector.

State agencies report 43 TV sets, fifty videotape recorders/players, two editing machines, 41 TV cameras (13X color), and a wide variety of accessories. The equipment is used for in-house training, documenting speakers, public service announcements, TV documentaries, and public meeting presentations. Only one agency has a full-time trained staff member to operate video equipment.

Agencies generally do not own state-of-the-art equipment, and many anticipate considerable systems replacement for the purpose of maintaining their capabilities rather than expanding them.

Montana's university system's video equipment is generally adequate for instructional purposes. MSU and UM possess rather extensive equipment and expertise in production. There is a problem of compatability between production equipment and formats between campuses.

Montana's broadcast stations represent the most extensive capabilities in the private sector. Each station possesses the studio, production equipment, and personnel - in varying degrees - to produce TV features. Broadcasters, however, utilize their equipment for their own business purposes, and are not generally available as production facilities.

In May, 1981 the Telecommunications Project conducted a scientifically valid random telephone survey of Montanans for the purpose of determining public opinions on a wide variety of public television and public radio issues. The randomly selected 1,434 interviews were chosen from computer-produced telephone numbers from a random generation program based on all phone numbers in Montana. The rough results show that:

1. 60% of those surveyed do not receive PBS, 38% do.
2. 23% could receive PBS if willing to pay for it.
3. 61% of Montanans do, or could, receive PBS.
4. 80% receive PBS by cable.
13% receive PBS by translator.
4% receive PBS by direct broadcast (out of state) or translator.
5. 90% receiving PBS are satisfied with the programming.
6. 81% of those buying cable service pay \$10 or less (exclusive of HBO).
7. 80% receiving PBS would like more Montana-originated programming (Mt. history and culture, 70%; local issues politics, 66%; outdoor and recreational, 71%).
8. 60% of those who could buy cable with PBS, but do not, cite excessive cost as the reason.
9. 67% of those who could buy cable with PBS, but do not, say they would if there were Montana-originated PTV programming.

EXPANSION PLANS FOR EXISTING VIDEO NETWORKS

The video networks, as essentially private sector operations, will expand in accordance with profit potential and traffic demand. The greatest growth has been in cable company expansion in recent years; a trend that will continue.

There are a variety of technical methods that could be used to provide PTV to Montana, in whole or in part. A mix of the technical alternatives is more likely than any one of them alone. There are weighty policy implications inherent in a selection of any alternatives or mix of alternatives. Prominent policy questions which arise include: (1) whether or not "local" Montana programming will be possible, and to what extent; (2) what portion of the state, and the population, can be served; (3) what the impact on

commercial cable systems might be; (4) what the cost might be, and how it would be distributed; and (5) whether a system, if built, would become obsolete or by-passed by new technology in the foreseeable future.

Regardless of the technology used to distribute a PTV signal, there are certain common characteristics.

Whatever is broadcast must first be produced by somebody somewhere. The Public Broadcasting Service (PBS) is the largest non-commercial producer and program buyer in the U.S. Consequently, most PTV stations are PBS affiliates. Not all Public Television is PBS. PTV stations may be independent by buying the programming desired, by being used for educational purposes, or by mixing PBS feed with a significant percentage of non-PBS programming. The University of Alaska Instructional Telecommunications Consortium, for example, will operate a PTV system based on satellite broadcasting which will combine considerable educational programming from PBS and other sources.

There are three ways in which a TV signal can be received in the home: antenna, cable, satellite dish. The antenna generally costs less, the cable more, and the satellite dish is most costly at present.

Broadcast

The feed control takes the produced programming and sends it to a high broadcast tower by cable or microwave. Equipment at the tower powers up the signal (up to 300 KW) which becomes an "airwave" after leaving the antenna. The signal is then received either by a TV set antenna or a TV translator.

A broadcast system to cover Montana would require seven high power broadcast stations. They could operate independently or as a network. In addition, a number of TV translators would be required to reach rural areas or areas hidden by terrain.

Microwave

Produced programs are taken by feed control and transmitted via cable or microwave to a receiver which is part of a larger microwave system. The signal is then retransmitted to the next microwave receiver/transmitter, and so on, the signal may be taken off the system at any microwave tower site. Sites that have equipment to remove or insert transmissions are drops. If the microwave tower does not have remove/insert equipment it is a repeater used to continue a signal between those that do; but the equipment to create a drop may be added.

The microwave option is complex by virtue of the options available. Three common carriers operate systems which alone or together could cover most of Montana. There is a fourth possible option; a state owned/leased microwave system used for land mobile, data communications, telephony, public radio, and public TV on an integrated basis.

State Owned

According to a 1973 MSU Electronics Research Laboratory Report (#3373 - Montana State Communications System), modified for today's cost and 6 GHz design characteristics necessary to a state video system serving all cities with at least 4,000 people, costs would approximate \$3.5 million plus site, construction, and associated costs. Charges for usage of Bell's Mw system to cover the same cities of over 4,000 population would be approximately \$2 million per year.

Montana's two private common carriers, the Intermountain and Western Mw systems, could - with remote repeaters - cover the entire state. Arrangements for doing so would be highly negotiable, however, rendering cost estimates difficult. The state could pay the cable companies to carry the PBS signal, or permit them to carry it for nothing in return for the right to remove the signal for transmission at drop and repeater sites.

Satellite

Satellite systems are conceptually simple. An uplink sends produced programming to the satellite in the form of a narrow microwave beam. The satellite equipment which receives the signal, called a transponder, retransmits the signal over a broad area. Earth dishes collect and concentrate the Mw signal, which is then retransmitted over a Mw system or converted from Mw frequency into the desired TV frequency and broadcast or carried by cable to viewers, or any combination thereof.

Alaska intends to lease a satellite transponder and mix PBS, instructional, and other programming for broadcast starting October 1, 1981. Montana has received permission from Alaska to rebroadcast free of charge.

The state of Nevada university system is attempting to install the "Nevada Plan" to centrally operate outlying receive only satellite dishes by remote control. The signal received would be broadcast, and local programming and news could be inserted. The local installation would cost about \$85,000. Operating expenses, for a community of 400 households, would be approximately \$12 per year. Several Montana communities are attempting to join the Nevada plan.

The state of Montana permits the creation and operation of TV tax districts for the provision of TV service. Such districts could fund, in whole or in part, PTV service such as Alaska's and Nevada's plans.

The technology presently exists to broadcast programming by a satellite, or series of satellites, and receive the signal on a small dish in the home. Japan has such an experimental system in place, and two American firms are applying to the FCC for permission to create such a system in the U.S. Such a system would be able to reach virtually every household in the U.S.

The new technology is possible because new satellites will transmit at considerably higher power levels.

Comsat and Sears, Roebuck Company recently discontinued negotiations which would have resulted in combining Comsat's satellite service (very similar to PBS) with a national distributor and maintenance company. The service, according to industry guesses, would have cost about \$350 for installation and \$15-\$25 per month. Comsat (Communications Satellite Corporation of America) is now looking for other partners in the venture.

If the FCC eventually authorizes direct satellite broadcasting within the next 3-6 years, as many in the industry expect, the state must weigh the risk involved in spending large sums of money for PTV which might be bypassed by new technology.

PBS does not permit anyone to receive its transmissions except for rebroadcast by PBS affiliate stations. If PBS undergoes the deep funding cuts proposed by President Reagan, there will be pressure to make up funding shortfalls. If PBS changes its practices to expand the number of affiliates buying its feed, it may become possible to install satellite receiving dishes with attached low power transmitters wherever needed for as little as \$20,000 - \$25,000.

The key consideration in reviewing future technological and economic developments in PTV is that they may radically alter the desirability of any system put in place in the near future.

Of the three major signal distribution technologies considered - broadcast, satellite, microwave - the broadcast scheme considered would clearly be the most costly. Depending on the scheme used, and on whether Montana programming is considered crucial, either satellite or microwave is the least expensive. It is probable that future developments - such as Alaska PTV or Nevada satellite plans - will drive PTV costs down in the future.

Public television or a reasonable substitute is, in all probability, an eventuality in Montana - very possibly within the next decade. The question is, therefore, less when than how; less how much it will cost than whether the state helps pay for it as the public corporate body; less a question of technical feasibility than the desire to have it and willingness of groups to acquire or provide it in the absence of an official state commitment.

PUBLIC RADIO

Any radio station which is non-commercial in its programming, which is at least partially funded with public money, and is associated with a public institution, is referred to in this report as a public radio station. This is so because it is presumed that a public radio study must consider which stations are, in fact, "public" - in the sense that a public radio policy might be applied to them. Also, continual differentiation between stations

according to which programming sources they affiliate with is cumbersome in the extreme.

Because of the financial structure of the public radio system, monies for operations must come from the private sector in the form of donations; the government in the form of grants; or semi-public groups such as a student body. Some stations are associated with an educational facility and consequently receive budgeted public monies.

In Montana, all public radio stations are affiliated with a college or vocational-technical school. Generally, the financial situation remains tenuous.

There currently exists a national public radio (NPR) service. Stations which affiliate with NPR receive a programming menu to choose from. There are specific criteria that must be met if a station is to gain affiliation or membership with NPR; only one Montana station currently meets the criteria.

The criteria for becoming a member of NPR are developed by the Corporation for Public Broadcasting, which supplies money for N.P.R. member stations in the form of community service grants. N.P.R. may provide money for stations attempting to become N.P.R. members by issuing expansion grants.

There are six public radio stations broadcasting in Montana.

There appear to be six different technical alternatives that could be employed for increasing public radio coverage for either N.P.R. stations or non-N.P.R. stations:

(1) Increase transmitter power; (2) increase the number of translators; (3) microwave distribution with local transmitter; (4) "hard wire" ties between stations; (5) bicycle of tapes from station to station; (6) Use of satellite uplinks/downlinks.

In addition to membership status in NPR, there is an affiliation status upon which numerous states depend to build a public radio network based on a primary NPR programming feed. Stations may elect two means of affiliating with NPR. First, any station may purchase non-timely taped programs for replay.

Secondly, any public radio station may sign an agreement with an NPR member station and NPR itself to acquire NPR feed from the local member station. The states of Minnesota, Wisconsin, and W. Virginia have used this option to build statewide radio networks affiliated with N.P.R.

One aspect of the Telecommunications Project was a survey of public attitudes about public radio and television within the state of Montana.

One quarter of the subjects did not know whether they could receive public radio - 38% said they could, 37% said they could not. Those receiving public radio were generally pleased with its quality - 68% find it satisfactory.

Their preference for Montana programming were:

(1) Montana history and culture; (2) local issues and politics; (3) radio theatre; (4) state issues and politics; (5) Montana legislature; (6) outdoor and recreational; (7) high school sports; (8) college sports; (9) professional sports; and (10) religious programming.

Funding preference in descending order were:

(1) Combined state-local district funding (47%); (2) no funding (22%); (3) local district funding (11%); (4) state funding only 10%; (5) federal funding (9%).

Interviewers explained to the subjects that public radio stations are independently funded and operated and asked whether they thought the various stations ought to be made into a network. Responses were evenly divided - 32% said yes, 37% said no and 31% had no opinion.

Montana's publicly supported radio stations claim a coverage of approximately 425,000 people (KUFM - 220,000; KEMC - 120,000; KGLT - 70,000; and KNOG - 15,000).

As noted there are six alternatives for providing public radio:

Increase transmitter power - This system would be something to consider if Montana didn't have such mountainous terrain. Because the F.M. signal travels line of sight, no amount of power will beam the signal through a mountain or hill, thus making reception impossible if there is intervening terrain.

Increase the number of translators - Due to Montana's topography, translators are one means by which an F.M. signal can be widely distributed. Translators are installed on strategic points - mountain tops - and used to beam the F.M. signal from a main transmitter into a specific area, or from translator to translator.

Microwave distribution with local transmitter - The F.M. signal is carried by microwave from an originating transmitter to a transmitter located at the termination point. The system is the same as the transmitter-to-translator method except that signal distribution is by microwave.

Hard wire ties between stations - This system employs a telephone link between the originating station and the station being served. The radio signal is carried over a telephone line.

Bicycle of tapes from station to station - Pre-recorded tapes of any type of programming are sent from the originating station to the "receiving" station.

Use of satellite uplinks/downlinks - involves lease of a satellite audio channel or use of an existing satellite signal. An uplink capability would permit the transmission of a signal to a satellite. The signal return-

ing from the satellite would be received anywhere within the "footprint" (area covered) of the satellite.

In the case of the preceding six technical alternatives, most require some form of approval from the F.C.C. in the form of permits for: construction of translators and transmitters; increase in transmission power; up-link/downlink connections; or using hard wire ties. Bicycling of tapes has special legal problems that render it inappropriate.

For microwave distribution once the signal is carried over the microwave unit from the originating station it can be retransmitted at the terminal point. This system allows local programming insertion. For example, Great Falls could install a transmitter only for about \$25,000 by delivering the signal via microwave. By using seven or eight translators receiving the signal from the Great Falls transmitter, most of central Montana could probably be covered (including Havre).

Funding approximations for the various technical alternatives are chancy by nature. Costs which cannot reasonably be anticipated - such as site purchase, road access, providing power, propagation studies, and so on - are not considered. Equipment costs are based on average approximations for at least minimally reliable gear.

(1) Transmitter

initial cost per site	\$3,000
annual cost per site	1,500

(2) Increase number of translators

initial cost	\$4,000
annual cost	900

The number of translators required to cover the majority of Montana would depend on how many stations were used to provide the original signal.

(3) Microwave/low power transmitter system

initial cost	\$31,500
annual cost	

(4) Hard wire ties

not feasible

(5) Bicycling tapes

a. Recorder (reel-to-reel), mikes, mixer \$3,500

Postage or other distribution fees are unpredictable and dependent on use of the programming.

Copyright restrictions apply to much material provided by programming services such as NPR. Montana originated programming put out by Montana public radio stations would not be restricted as to distribution for copyright reasons.

(6) Satellite

a. Satellite 19dBW channel	\$120,000/year
b. Downlink (incl. some site costs)	10,000/one-time
c. Downlink low power transmitters	25,000/one-time
d. Uplink lease	36,000/year
-or-	
e. Uplink purchase	\$150,000/one-time

Satellite cost have been extremely volatile over the last several years. Costs of "c. uplink lease" and "d. uplink purchase" are mutually exclusive - the use of one precludes the need for the other. The cost of carrying a signal by microwave between the Seattle uplink and a Montana public radio studio is not included, but would be significant. In addition, the number of low power transmitters required would depend on which of the existing public radio stations made use of such a state provided satellite feed, and upon an engineering study.

GENERAL NEEDS ASSESSMENT & POTENTIAL TELECOMMUNICATIONS SOLUTIONS

Although the Project performed specific needs assessments pertinent to the various fields of telephony, data communications, land mobile systems, public television and public radio, the Project felt that a general statewide Needs Assessment would also be pertinent to its efforts.

Unfortunately, the Project did not have the resources to accomplish such a task. However, it was able to discover that such research had been performed by the Cooperative Extension Service at Montana State University in Bozeman: "Project 80".

Project '80 documented the identified problems existing in the State and listed recommendations as to the solution of those problems. The research performed in Project '80 utilized the input of over 3,000 community leaders. The report detailed the compiled and condensed findings for the entire State. The Project determined that a substantial number (roughly 54%) of the problem-solving recommendations could be accomplished through telecommunications applications.

The Project '80 format deals with the general topics of agriculture, natural resources, home economics, youth, and community development. Each area is then broken down into specific topics.

The Project selected over two hundred recommendations wherein telecommunications could be utilized to assist in the completion of those recommendations. In this way, the Project hoped to illustrate the value

of telecommunications as a problem solving tool; a pragmatic, functional methodology of satisfying the needs of the people of the State of Montana.

Upon further scrutiny of the recommendations of Project '80 that could utilize telecommunications to solve existing problems, the Project ascertained that these recommendations, in a telecommunications applications sense, could be categorized into five basic areas. These areas are local education applications, educational system applications, applications requiring input from the public (although all applications require input from the public to some degree), state data-base applications, and miscellaneous.

The Project has provided a detailed technical systems design to apply telecommunications to uses suggested by Project '80 in the Montana Information Network.

Examples of the 233 selected Project '80 recommendations susceptible to telecommunications applications include:

1. A complete inventory of water resources should be undertaken. Wasteful water practices must be eliminated. Off-stream storage reservoirs to maintain instream flows should be investigated and promoted. A resource library which contains information about agencies involved in controlling wildlife and recreation activities should be developed.

The inventory of water resources, as well as the resource library, can be made into interactively-accessible data bases for the use of Montana's population.

2. Coordination between helping agencies should be improved.

Telecommunication systems can play an important role in this coordination process. In order to coordinate, one must first communicate.

3. Helicopter ambulance service should be available to all communities.

Notification, dispatch, and in-transport air-hospital communications are necessary to such a service.

4. Continuing education opportunities should be provided for all age levels. Local school districts should take advantage of the one-mill levy option to fund these programs.

Educational use of teleconferencing is already in use in Montana, offering geographically dispersed people the opportunity.

5. Family life and communications courses should be made mandatory in schools for grades K-12.

Community information and teleconference centers described in the Montana Information Network would provide an excellent opportunity to teach telecommunications applications.

The information network would consist of a Community Information

Office and Teleconference System in selected communities statewide. Community information offices (CIO's) would consist of a network data terminal, audio teleconference equipment, facsimile transmitter, and associated equipment and office space. Teleconference centers (TC's) would be used for audio teleconferencing and FAX transmission only. TC's should be designed to permit location in existing public buildings, such as libraries and courthouses, and operated by existing employees whenever possible.

CIO's and TC's would be designed to significantly replace the need for, and cost of, travel for state employees and private sector citizens conducting business with the State. As travel costs increase the pressure on travel budgets also increase; travel budgets tend to suffer cuts first. However, budget restrictions do not decrease the need to communicate. CIO's and TC's offer communication of voice, data, and hard copy facsimiles at a fraction of the cost of travel. The telephone handset is not an adequate substitute, and the State has not developed an alternative communications system for travel. The information network is an excellent alternative which has the added advantage of increasing productivity by radically decreasing non-productive travel time.

Cost of an information system (including personnel, space, furnishing, trunks, hardware, et al) would be less than 20% of the State's documented travel costs in 1980 (\$10,342,500) if the system consisted of 11 CIOs and 16 TCs. Savings in subsequent years would be greater since hardware costs would have been paid for in the first year. All things considered, an executive order mandating a 30% reduction in travel costs would net the State a savings of about \$1 million over and above first year costs of the information network.

Operation of the network would be provided by a Helena-based central teleconferencing control center for the conduct of multiple, simultaneous intra/inter state teleconferences, either point-to-point or multi-point, provide schedule services, taped minutes, user training, and moderator assistance to users.

The 11 sites for CIO's should be: Billings, Butte, Great Falls, Missoula, Helena, Bozeman, Havre, Kalispell, Miles City, Lewistown and Wolf Point.

The 16 TC sites include: Anaconda, Livingston, Glendive, Sidney, Laurel, Glasgow, Deer Lodge, Dillon, Cutbank, Whitefish, Hardin, Shelby, Conrad, Hamilton, Baker and Roundup.

The above site distribution results in 60-80% of the total population being within a thirty minute drive of either a CIO or TC. One hundred percent of the states population is no further than about 75 miles from either a TC or CIO.

Use of CIO data terminals would permit access to a large number of stored data bases such as those listed in the full report.

INTRODUCTION

In 1980 the State of Montana applied for and received a Grant from the National Telecommunications and Information Administration, a branch of the U.S. Department of Commerce. The Grant was divided into two basic concerns. First, an attempt has been made to determine and review the technical alternatives available for the provision of public TV and public radio to the people of Montana; also, to determine citizen's views on those topics, as well as the present extent of coverage. Second, the Montana Telecommunications Project has surveyed the State's in-house usage of land-mobile radio (two way), data communications, and telephony to determine existing systems, attendant problems, cost efficiencies, user group needs, and recommendations for the future.

The purpose of the Project's activities in public radio and public TV has not been to develop a plan for future action, but to provide a starting point for those wishing to do so. It would be presumptuous in the extreme to develop such a plan when, in fact, the political and economic implications should properly be left to the executive and legislative branches, citizens groups, and professionals working in those specific areas.

Specifically, those sections of this report on public TV and public radio are intended largely as draft working documents for the Montana Telecommunications Advisory Council (MTAC). MTAC was originally appointed by Governor Thomas Judge, and continued under Governor Ted Schwinden. As a group of citizens and professionals interested in public

TV and public radio related issues, the first opportunity for developing actual recommendations is theirs.

The thrust of those sections dealing with the State's in-house telecom systems (land-mobile radio, Data com, and telephony) is different. While MTAC is encouraged to review and comment on those topics, those sections are especially directed to the Director of the Department of Administration and the Governor to assist in their duties related to the management of the State's telecom systems. Accordingly, those sections are more technical, analytical, and concerned with specific technical and management recommendations.

There are three important points of which the reader should be clearly aware. First, this is above all a draft report. Secondly, the scope of the draft is huge - and it was constructed in a very short time for the number and extent of topics (one year). Third, the contents of this draft represent nothing more than a starting point for those interested in, or responsible for, the management of telecommunications in Montana.

Each section of this draft report has been designed so that it can be read as an individual unit, so that readers interested only in particular sections need turn only to those sections. Further, the technically specific sections have been designed so that they contain a brief narrative at the beginning, followed by attachments.

As is usually the case with any far-reaching document, many people

are deserving of credit and thanks: MTAC members, subcontractors, task force participants, State personnel, local officials, federal specialists, and so on. Unfortunately, pages would be required. Nonetheless, we extend a sincere "thank you" to all of them.

Alden E. Clifford, III

Gregg L. McCurdy

SECTION II
TELEPHONE

SECTION II

TELEPHONY

At present, the State leases an extensive network of switching systems throughout Montana, paying roughly \$2,182,000 per annum for nineteen separate switches serving approximately 8,700 lines, and 10,200 telephones. All of these sites, with the singular exception of a small switch in Kalispell, are leased from Mountain Bell, and therefore, subject to Mountain Bell corporate policies, including tariff increases. Attachment one details the layout of these switching systems, as they were known to have existed in April of 1981. Also provided in this attachment is a breakout of switch costs, main line assignments, number of telephones per switch, and trunking arrangements.

Attachment two provides a listing of the current switch costs from Bell system and the extrapolated impact, by switch, of a now pending July, 1981 tariff on file with the State Public Service Commission. The careful reader will observe some small discrepancies between the system schematic switch costs and the switch costs provided by attachment two. These exist for two reasons: one, costs on attachment two are approximate, and two, the system, being extremely large, is volatile, e.g., mainline assignments, trunking arrangements, and telephone hand set amounts shift daily.

Also of interest is the entry titled "Big M: EMC, U. of M., MSU, WMC" in attachment two. This is a reference to the tandem dial-through capability of these four switches. It is a separate leased item from Bell system and should not be construed as yet another switch belonging to the State of Montana.

The fundamental message here is two-fold: one; at present, the State has a vast telephone network, constantly in a state of change; and two, there exists every possibility that this network will become increasingly more and more expensive as time goes on, so long as this system is tied to a tariff structure.

Tariff increase requests are not a rarity in Montana. Attachment three gives a brief history of tariff activity of Mountain Bell in the past three years. The interesting trend here is that from the period 1968-1979 there were no tariffs filed at all; however, the competitive marketplace in telephone systems coupled with the increasing costs of providing service has resulted in three tariff requests in as many years. Also worthy of note is the fact that so far the PSC has, on every occasion, granted only a portion of the amount requested by Bell system. Of course, a perceptive corporation will compensate for this simply by frequently requesting more than they need. This tactic will usually leave an overburdened and understaffed PSC little option but to continue granting periodic small increases, so as not to appear to be totally opposed to the regulated business, while fighting a "delaying action" against an unsupportable and extremely large tariff increase.

An interesting article regarding this appeared April 3, 1981 in the Great Falls Tribune and detailed the trend of Bell system tariff increases. While its information was couched in most tentative terms, Bell system itself stated that the cost of basic telephone service in Montana could quadruple by 1990. The trend here is clear: As a basic business management decision, the State would do well to remove itself from an ever-increasing tariff situation, as regards its telephone network. One way to accomplish this is through fixed lease of switches, or purchase of switches; both of these would require a

request for quotation situation.

The State, responding to user pressures to rejuvenate certain switches, did issue a request for quotation to various vendors for lease of new switches at Helena, Bozeman, Billings, and Missoula, in 1979. However, due to the brevity of the document (eight pages), and a somewhat ill-defined focus, the replies to the RFQ were confusing in the extreme. After utilizing a number of consultants to assist them in deciphering these responses, the State ultimately has decided to re-issue the RFQ, as a more carefully constructed document.

The Project applauds this decision but would caution the State to include as mandatory in the RFQ a number of fundamental contractual concepts and system capabilities such as the stipulation of fixed capital equipment costs, compensation for vendor non-performance, and the capabilities for the switches to account for their own line and set assignments (to insure correct billings), to allow for user programmability (to reduce vendor labor costs), and to "queue" system trunks (to better utilize long distance capabilities). As well, the State may wish to address the notions of rewiring the local distribution networks serving the switches in question. As well as constructing their own carrier mechanisms between the switches in question in order to control that cost as well.

Attachment four illustrates the best-case cost savings for telephony systems for the State of Montana. This attachment postulates a number of concepts: One, that all switches on the network are removed from the tariff cycle, (the cost of the pending tariff increase is multiplied by ten years, the life of an average RFQ). Two, that long distance communications costs

could be dropped dramatically by eliminating operator-assisted calls, by maximizing efficiency of trunks assigned to this use, by removing a number of these trunks (insofar as a fewer number would be required to service the system), and by including an automatic route selection capability in the system, which selects the cheapest route for long distance to be transmitted.

Third, the attachment postulates that a programmable switching system could save roughly \$81,000 per annum in labor costs, system-wide, and lastly it postulates that a system capable of accurate record-keeping could save the State five percent of equipment costs, which could result from erroneous billing entries on the part of the vendor, during the same ten year span mentioned earlier.

A few things must be emphasized concerning this attachment. First and foremost, the figures are estimates, and they represent the best possible savings. However, it is true that, to the best of the Project's current knowledge, these figures are achievable. It is certainly true that the State would make enormous gains merely by fixing the capital equipment costs, if accomplishing nothing else in a new RFQ procedure. Of interest here is the bottom-line figure of, potential, \$15 million + in savings in telephony systems over the life of a ten year contract.

In assessing the needs of telephone users, the Project formed a task force (see attachment five) comprised of administrators from the various sites represented in the system schematic. These administrators were then polled with a relatively simple questionnaire (attachment six) to ascertain their feelings concerning telephony matters, especially as regards system replacements and system capabilities.

The results of this initial assessment are detailed in attachment seven.

However, in summation, the task force had the following feelings:

1. Management problems on the present telephone system are fairly serious at present, for the majority of users.
2. Overwhelmingly, administrators responsible for telephone systems see the trend of management problems becoming more serious with the passage of time.
3. The largest problems encountered by administrators, in order in severity, were escalating costs, inadequate switch expansion capability, "facilities" inadequacy (lack of cable), incorrect billings, and poor turnaround times for completion of orders. One response cited "message recorder" difficulty as being extremely frequent.
4. All systems have grown at the rate of twenty percent or less in the last year. In the last two years, roughly twenty percent of all systems grew from 21-40%: the remaining systems grew at a rate of 20% or less.
5. However, in the last five years, ten percent of all systems grew at a rate of 61-80% on size; roughly twenty percent of all systems grew at 40-60% in size; roughly thirty percent of all systems grew from 20-40% in size, and the remaining systems grew at a rate of less than 20%.

This indicates that, although growth has leveled off for the last year, the potential for major system growth still exists.

6. A majority of administrators (58%) felt that they could continue for three years or less with their present systems. Twenty-five percent of the administrators felt that they could last no more than one year with their present systems. This indicates an

urgent need on the part of many administrators to replace their systems.

7. In descending order, administrators felt that trunks, dial-up data-lines, and main lines would be the largest area of system growth. This indicates a difficulty in existing trunking levels, and a growing awareness on the part of administrators of the importance of data transmissions in PBX systems.
8. The overwhelming majority of administrators felt that their systems permitted an acceptable level of service for in-house calls, while a significant portion (36%) felt that the same was not true of WATS calls. This could indicate system guide inadequacy as regards WATS trunking.
9. A substantial majority of administrators (67%) felt that their organizations needed new telephone systems.
10. Reasons for those who felt that their organizations needed new systems included the following:
 - A. "SLOW DIAL, NO CALLBACK, NO CALL FORWARD, INADEQUATE CONFERENCE CAPABILITY."
 - B. "INFLEXIBILITY OF CURRENT SYSTEM."
 - C. "SUPERIOR CAPABILITIES."
 - D. "MORE COST EFFECTIVE."
 - E. "CENTREX OBSOLETE."
 - F. "NEEDS REPAIR ALL THE TIME."
 - G. "TOO MANY IN-HOUSE CALLS TIE UP OUTSIDE LINES."
 - H. "CAMPUS OVERLOAD: LITTLE EXPANSION AVAILABLE."

11. When queried as to the time frame of system replacements, those administrators who felt that a replacement was essential replied as follows:
- A. "ONE YEAR"
 - B. "CURRENTLY BEING LOOKED AT AND SURVEYED"
 - C. "ASAP"
 - D. "TWO OR THREE YEARS AT THE MOST"
 - E. "SOON AS POSSIBLE"
 - F. "WITHIN NEXT YEAR"
 - G. "SOON AS POSSIBLE"
 - H. "ONE YEAR"
12. Of those administrators who felt that a new system was essential, the following system features were desired on the new systems, in order of attractiveness:
- A. CUSTOMER ADMINISTRATION CENTERS
 - B. DIRECT-IN-DIALING
 - C. POWER FAILURE CAPABILITY
 - D. TRAFFIC MEASUREMENT
 - E. ATTENDANT INTERCEPT
 - F. AUTOMATIC ROUTE SELECTION
 - G. CALL FORWARDING
 - H. CALL HOLD
 - I. CALL WAITING INDICATION
 - J. INTERCOM
 - K. PUSH BUTTON DIALING
 - L. WATS TIMING
 - M. QUEUEING

(Other features, in order of descending importance,
can be found in detail in attachment seven)

13. Other specific comments of administrators indicated desires for the capabilities for operators to verify trunk status, for systems to adequately cope with data transmissions, and the capabilities for systems to better serve dormitories.

In addition to consulting with the administrators responsible for the management of their respective telephone systems, the Project, through subcontracted labor, conducted personal interviews with nineteen agency heads located in the Helena area and mailed surveys concerning the telephone system to five hundred randomly selected, agency-specific employees. Roughly forty-two percent of the mail surveys were returned, an amount which allowed an accurate statistical picture to be drawn. Attachments eight and nine illustrate the format for the agency head interviews and the mail survey format, respectively.

Significantly, a variety of differing opinions were encountered in this process. (Attachment ten. The lengthy and thorough subcontracted study of telephony needs assessments for State agencies is included in its entirety for the perusal of the extremely interested reader). This detailed telephony needs assessment is broken into discrete sections, showing individual agency mail survey responses, as well as individual agency personal interview responses. However, for the sake of brevity, only the composite agency response and the composite personal interview response will be examined here.

Key personnel of the Helena-based agencies interviewed in this regard all agreed in the facts that escalating costs were "very frequent" telephone problems. Interestingly enough, however, the agency "key personnel" interviews listed no other serious problems. As a matter of fact, these individuals largely stated that systems being out of order, busied out, or interfered with were rarely problems. Similarly, poor turnaround times for orders, incorrect billings, inaccurate information from vendors, and system expansion difficulties were also frequent.

The contrast between the perceived telephony problems of the telephone system administrators located throughout the many sites shown in attachment one and other key personnel located in Helena may be due entirely to the fact that the former group works much more closely with their switching systems than does the latter. The two groups were extremely close, however, in their judgements of switch replacement time frames, 58% of state-wide administrators projecting successful operation of present systems for three years or less, while 59% of key agency personnel projected the same. Further, both groups were close on the difficulty of accessing WATS lines: 36% of state-wide administrators stated they had an unacceptable level of difficulty in placing WATS calls, while 47% of Helena-based key agency personnel stated the same.

As mentioned earlier, the Project also performed a mail survey of 500 State employees to ascertain their feelings regarding the telephone systems in use. Although, of course, these random employees could not be expected to be as familiar with switching systems as either the system administrators or as the Helena agencies key personnel, their replies are certainly valid in their own right. Of particular interest in their composite reply (which

did not include employees of the university/college system) was that the only problem areas of significance to this group were "system busy" and "escalating costs". Eight-seven percent of this group felt that a new system was not an immediate requirement. However, in keeping with the administrators, and the key Helena personnel perceptions, 59% of this group also felt that new systems would be required in three years or less.

The universities and colleges in the State were broken out separately by the detailed needs assessment. Their individual responses can be examined in attachment ten. However, in summary, the educational institutions felt as follows: "Escalating costs" were identified as a difficulty, especially at the university in Missoula (42%) and at WMC in Dillon (20%). "System busy" was also identified at all institutions (excepting WMC) as a major source of problems to users; the average response here was 28.5%, with a high score of 43% at MSU, and a low score of 22% at the University in Missoula. Similarly, a majority of responses from all institutions, excepting the Montana College of Mineral Sciences and Technology, felt that a new system was essential within three years or less. The average score here was 59%, with a high score of 76% at EMC, and low scores of 50% at both WMC and MSU.

Interesting correlations then, emerge between the educational institutions system users and other surveyed personnel, most especially in concern over system costs and traffic flow ("system busy"). Also strongly correlatable is the 59.5% average value showing system replacements desired in three years or less.

In a general overview of telephony needs assessments, some common areas

emerge among the four surveyed areas (state-wide system administrators, key Helena personnel, general users, and users from educational institutions). These are a common concern over rising costs and a remarkably constant 52-59.5% perception that new systems would be required within three years or less. The system administrators and the Helena personnel were also concerned with the difficulty in placing WATS calls: This was closely echoed by the general user and educational institution user difficulty in "system busy" conditions, which, of course, includes trunk access (e.g., WATS) attempts. Readers are referred to attachment ten for a much more thorough breakdown of needs.

Facilities projections, as well as being a grant requirement, also provide insight into the probably growth rate of the state-wide telephone system. The composite projection for the entire system, as perceived by its various administrators, is included as attachment eleven. A summary of these projections, however, can be provided.

Main line growth is projected to be slow but steady for the next five years. Extension station increase is sharper from years three to five than for years one-two; this is due to an expected increase in the extension station ratio if an electronic switch is installed in Helena to replace the existing switch. Two-way trunks are expected to increase steadily at a rate of 4% per annum, while one-way outgoing trunks appear to be increasing at a slower rate. The rate of increase for one-way incoming trunks is projected to drop slightly in the third year, but will recover to its original position shortly thereafter.

Dial-up computer ports are projected to increase more sharply than any other system component, 5% the first year, 6% the next year, and 7% for all years after. This is an obvious indication of data transmission applications within the state systems. Off-premise extensions are expected to show a slower rate of increase in the third year than in the first two, but the rate of increase will recover to the second year level in years four and five. Foreign exchange circuits (FX's) will show a slightly escalating rate of increase as time continues. In essence, these projections show that the State can expect a steadily growing telephone system over the next five years, at an absolute minimum.

Perhaps the largest management difficulty in the telephony area is the concept of ever-increasing costs without a corresponding increase in service. This is, of course, due to consistently increasing tariff rates on the part of the vendor. The best solution to this difficulty is, as described earlier, an RFQ arrangement. However, one potential difficulty exists in this concept: The State must decide if it wants a single vendor to supply all nineteen switches throughout the State. If, in fact, one vendor supplies all switches for the system by definition, no other vendors stand to gain revenue from the State, which can present economic difficulties for the State. If, on the other hand the State allows multiple vendors to install differing switches throughout the system, the State can realistically expect some difficulty in the ability of these switches to communicate, and considerable administrative difficulty in coordinating repair, maintenance, and system upgrading between these multiple vendors.

Another major problem the State faces is lack of expertise in the

telephony area. This is due to multiple reasons; among them the notions that telephony expertise is relatively rare outside of vendor corporation engineering sections; that the State has multiple switch sites with a corresponding multiple number of site switch managers, most with other duties as well; and that the State Division Communications has only one F.T.E. assigned to this task, which is insufficient manpower to contend with centralized management of a system of this scope.

This lack of expertise leads, in turn, to poor switching system design, which leads in turn, to poor service to users, which leads, in its turn, to user pressure to management to replace the switch in question.

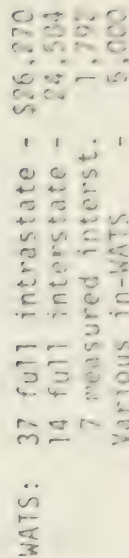
A number of recommendations in the area of telephony can be made. First and foremost among these is the concept of increasing the level of telephony expertise within the State government. This is best accomplished by increasing the level of manpower and education within the Division of Communications in the telephony area. Correlating with this is the concept that such expertise would require suitable salary to retain.

Another recommendation the State should consider is the development of a standard RFQ for switching systems; The State should retain the basic contractual portions of the RFP now being constructed for the four main switches and utilize them throughout the system wherever a switch replacement is required, changing only the system specifications to tailor-fit the switch in question.

Thirdly, the State should consider utilization of the state-wide system

as a temporary "back-bone" to satisfy public needs that can be met utilizing non-broad band (e.g., voice-grade) bandwidth technology, such as teleconferencing, FAX, or slow scan video. This could easily be accomplished by simply extending on an off-premise extension basis, circuits into local city halls or other common public meeting halls. This public system concept is expanded further in Section VIII of the final report.

Security
Division
Missoula



Proposal for new system received
Proposal for new system pending
Included in Comm. Division Program
Paid for by Communications Division

Switch type
Lines/Sets
Cost/month

PBX COST BREAKOUT

			MONTHLY CURRENT	ESTIMATED PENDING TARIFF	INCREASE
BILLINGS	EMC	701B CTX CU	\$ 9,400	13,630	45%
	ESD	770 A	850	1,649	94%
BOULDER	RIVER SCHOOL	757 A	2,800	5,432	94%
BOZEMAN	MSU	701B CTX CO	37,000	53,650	45%
BUTTE	TECH	DIMENSION 400	4,800	5,376	12%
	"BIG M"		1,250	1,250	0%
DEER LODGE	PRISON	770 A	1,650	3,201	94%
DILLON	WMC	701 B CTX CU	4,400	7,564	55%
GALEN	STATE HOSPITAL	770 A	1,300	2,522	94%
GT. FALLS	GRAIN LAB	740 E	2,400	7,656	94%
	ANG	770A	1,850	3,589	94%
	ESD	770A	950	1,843	94%
HAVRE	NMC	770A	1,900	2,945	55%
HELENA	D.of A.	#5 CTX CO	72,500	105,125	45%
	MTN VIEW	756 A	240	466	(approx.) 94%
MILES CITY	PINE HILLS SCHOOL	770 A	1,200	2,328	94%
MISSOULA	U.of M.	NA409 CTX CO	30,600	44,370	45%
	FORESTRY	770 A	980	1,901	94%
	E.S.D.	770 A	770	1,494	94%
WARM SPRINGS	STATE HOSPITAL	770 A	3,250	6,305	94%
BIG M: EMC, U.ofM., MSU, WMC:			1,750	1,750	0%
			<u>\$181,840</u>	<u>\$271,046</u>	
			\$2,182,080	\$3,252,552	
			per yr.	per yr.	

DIFFERENCE BETWEEN CURRENT & PENDING COSTS: \$1,070,472 per yr.

(\$10,704,720 LIFE OF RFP)

SOURCE: BELL SYSTEM

TARIFF SUMMARY: BELL

PASSED	FEBRUARY, 1979	SERIES PBX INCREASED 20% 1ST TARIFF SINCE 1968 REQUESTED: 11.4 MILLION APPROVED: 3.3 MILLION
	AUGUST, 1980	NO DIRECT INPACT ON PBX OFFERINGS RESTRUCTURE OF PRIVATE LINE OFFERINGS AND SOME TERMINAL EQUIPMENT REQUESTED: 16.6 MILLION APPROVED: 6.5 MILLION
PENDING	DECEMBER, 1980	WILL AFFECT SERIES PBX OFFERINGS 74-94% WILL AFFECT CENTREX PBX OFFERINGS 55%
	MAY, 1981	INTERIM INCREASE OF 3 MILLION (PART OF DECEMBER, 1980 TARIFF)

TELEPHONY COST SAVINGS POTENTIAL: BEST CASE
(TEN YEARS)

SAVED TARIFF COSTS	\$10,704,720
LONG DISTANCE SAVINGS (WATS, QUEUEING,ARS)	3,240,000
SAVED LABOR (PROGRAMMABLE SWITCH)	810,000
PREMISE CHECKS BY MACHINE	1,091,040

(\$1,091,040 IS 5% OF EQUIPMENT INVENTORY OVER
THE LIFE OF THE CONTRACT)

BETTER SERVICE	<u>INCALCUABLE</u>
OVER LIFE OF CONTRACT	\$15,895,560+

*NOT INCLUDING TRANSMISSION LINE OR LOCAL

DISTRIBUTION FACILITY REPLACEMENT (IF DESIRED)

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TELEPHONY TASK FORCE

Alden E. Clifford III, Montana Telecommunications Project Administrator

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ATTACHMENT SIX

(1) HOW SERIOUS ARE YOUR MANAGEMENT PROBLEMS ON YOUR TELEPHONE SYSTEM
AT PRESENT?

- A. NOT SERIOUS
- B. FAIRLY SERIOUS
- C. SERIOUS
- D. VERY SERIOUS
- E. EXTREMELY SERIOUS

(2) HAS THE TREND IN YOUR MANAGEMENT PROBLEMS BECOME MORE SERIOUS OR
LESS SERIOUS WITH THE PASSAGE OF TIME?

- A. MORE SERIOUS
- B. LESS SERIOUS

(3) WHAT TYPES OF PROBLEMS HAVE YOU ENCOUNTERED IN MANAGING YOUR TELEPHONE
SYSTEM? HOW FREQUENTLY?

<u>PROBLEM</u>	<u>FREQUENCY</u> (1=infrequent 5=extremely frequent)				
	1	2	3	4	5
A. POOR TURNAROUND TIMES FOR LABOR ORDERS	1	2	3	4	5
B. INCORRECT BILLINGS	1	2	3	4	5
C. INACCURATE OR MISLEADING INFORMATION FROM VENDORS	1	2	3	4	5
D. ESCALATING COSTS	1	2	3	4	5
E. SYSTEM DOWN-TIME	1	2	3	4	5
F. SYSTEM BUSIED OUT	1	2	3	4	5
G. INADEQUATE EXPANSION CAPABILITY	1	2	3	4	5
H. SYSTEM INTERFERENCE	1	2	3	4	5
I. "FACILITIES" INADEQUACY	1	2	3	4	5
J. OTHER (SPECIFY) _____	1	2	3	4	5
K. OTHER (SPECIFY) _____	1	2	3	4	5

(4) WHAT PERCENTAGE HAS YOUR SYSTEM GROWN IN THE LAST YEAR? (MAIN LINES)

- A. 0-20%
- B. 21-40%
- C. 41-60%
- D. 61-80%
- E. 81-100%

IN THE LAST TWO YEARS?

- A. 0-20%
- B. 21-40%
- C. 41-60%
- D. 61-80%
- E. 81-100%

IN THE LAST FIVE YEARS?

- A. 0-20 %
- B. 21-40%
- C. 41-60%
- D. 61-80%
- E. 81-100%

(5) HOW LONG DO YOU FEEL YOU CAN CONTINUE FUNCTIONING WITH THE SYSTEM

YOU CURRENTLY POSSESS?

- A. ONE YEAR
- B. TWO YEARS
- C. THREE YEARS
- D. FOUR YEARS
- E. FIVE YEARS

(6) IN TERMS OF EQUIPMENT PROJECTIONS FOR THE NEXT FIVE YEARS, WHAT DO YOU SEE AS THE LARGEST AREA OF SYSTEM GROWTH?

- A. MAIN LINES, VOICE
- B. DIAL-UP DATA LINES
- C. TRUNKS
- D. OTHER (SPECIFY)

(7) DOES YOUR INSTITUTION'S PBX OR SWITCH

A. PERMIT AN ACCEPTABLE PERCENTAGE OF IN-HOUSE CALLS TO GO THROUGH (WITHOUT BUSY SIGNAL)?

☐ YES

☐ NO

B. PERMIT AN ACCEPTABLE PERCENTAGE OF WATS CALLS TO GO OUT (WITHOUT BUSY SIGNAL)?

☐ YES

☐ NO

(8) DO YOU FEEL THAT YOUR ORGANIZATION NEEDS A NEW TELEPHONE SYSTEM?

- A. YES
- B. NO

(9) IF THE ANSWER TO 8 IS YES, WHY?

(10) IF THE ANSWER TO 8 IS YES, HOW SOON?

(11) IF THE ANSWER TO 7 IS YES, WHAT WOULD YOU LIKE YOUR SYSTEM TO BE ABLE TO DO?

- A. AREA CODE RESTRICTION
- B. ATTENDANT BUSY LAMP FIELD
- C. ATTENDANT CONFERENCE
- D. ATTENDANT DIRECT STATION SELECTION
- E. ATTENDANT INTERCEPT
- F. ATTENDANT RECALL
- G. AUTOMATIC DIALERS
- H. AUTOMATIC IDENTIFICATION OF OUTWARD DIALING
- I. AUTOMATIC ROUTE SELECTION
- J. CALL FORWARDING
- K. CALL HOLD
- L. CALL WAITING INDICATION
- M. CUSTOMER ADMINISTRATION CENTER (ALLOWS CUSTOMER TO NUMBER CHANGE PHONES AND ALTER FEATURE ACCESS TO PHONES)
- N. DATA PRIVACY
- O. DIRECT-IN-DIALING
- P. HUNTING
- Q. INDIVIDUAL CALL TRANSFER
- R. INTERCOM
- S. POWER FAILURE CAPABILITY
- T. PUSHBUTTON DIALING
- U. TRAFFIC MEASUREMENT
- V. WATS TIMING
- W. QUEUEING

(12) ARE THERE ADDITIONAL COMMENTS THAT YOU WOULD LIKE TO MAKE? IF SO, PLEASE ENTER BELOW.

(1) HOW SERIOUS ARE YOUR MANAGEMENT PROBLEMS ON YOUR TELEPHONE
SYSTEM AT PRESENT?

- A. NOT SERIOUS 25%
- B. FAIRLY SERIOUS 58%
- C. SERIOUS 0%
- D. VERY SERIOUS 17%
- E. EXTREMELY SERIOUS 0%

(2) HAS THE TREND IN YOUR MANAGEMENT PROBLEMS BECOME MORE SERIOUS OR
LESS SERIOUS WITH THE PASSAGE OF TIME?

- A. MORE SERIOUS 92%
- B. LESS SERIOUS 8% (VARIES)
0%

(3) WHAT TYPES OF PROBLEMS HAVE YOU ENCOUNTERED IN MANAGING YOUR TELEPHONE
SYSTEM? HOW FREQUENTLY?

<u>PROBLEM</u>	<u>FREQUENCY</u>				
	(1=infrequent		5=extremely frequent)		
	1	2	3	4	5
A. POOR TURNAROUND TIMES FOR LABOR ORDERS	50%	8%	25%		17%
B. INCORRECT BILLING	36%	18%	18%	10%	18%
C. INACCURATE OR MISLEADING INFORMATION FROM VENDORS (From State)	55%	18%	27%		
D. ESCALATING COSTS		9%		36%	55%
E. SYSTEM DOWN-TIME	42%	33%	17%	8%	
F. SYSTEM BUSIED OUT	10%	40%	40%	30%	
G. INADEQUATE EXPANSION CAPABILITY	33%		17%	8%	42%
H. SYSTEM INTERFERENCE	42%	17%	33%	8%	
I. "FACILITIES" INADEQUACY	27%	9%	17%	27%	20%
J. OTHER (SPECIFY) <u>Message Recorder Trouble</u>		2	3	4	5
K. OTHER (SPECIFY) <u>Repair</u>		2	3	4	5

*Single Entries

(4) WHAT PERCENTAGE HAS YOUR SYSTEM GROWN IN THE LAST YEAR? (MAIN LINES)

- | | |
|------------|------|
| A. 0-20% | 100% |
| B. 21-40% | 0% |
| C. 41-60% | 0% |
| D. 61-80% | 0% |
| E. 81-100% | 0% |

IN THE LAST TWO YEARS?

- | | |
|------------|-----|
| A. 0-20% | 82% |
| B. 21-40% | 18% |
| C. 41-60% | 0% |
| D. 61-80% | 0% |
| E. 81-100% | 0% |

IN THE LAST FIVE YEARS?

- | | |
|------------|-----|
| A. 0-20% | 45% |
| B. 21-40% | 27% |
| C. 41-60% | 18% |
| D. 61-80% | 10% |
| E. 81-100% | 0% |

(5) HOW LONG DO YOU FEEL YOU CAN CONTINUE FUNCTIONING WITH THE SYSTEM
YOU CURRENTLY POSSESS?

- | | |
|----------------|-----|
| A. ONE YEAR | 25% |
| B. TWO YEARS | 17% |
| C. THREE YEARS | 17% |
| D. FOUR YEARS | 8% |
| E. FIVE YEARS | 33% |

(6) IN TERMS OF EQUIPMENT PROJECTIONS FOR THE NEXT FIVE YEARS, WHAT DO YOU SEE AS THE LARGEST AREA OF SYSTEM GROWTH?

- | | |
|-----------------------|--------------------------------------|
| A. MAIN LINES, VOICE | 27% |
| B. DIAL-UP DATA LINES | 33% |
| C. TRUNKS | 40% |
| D. OTHER (SPECIFY) | *MAINTENANCE
*DATA LINE STATEWIDE |

(7) DOES YOUR INSTITUTION'S PBX OR SWITCH

A. PERMIT AN ACCEPTABLE PERCENTAGE OF IN-HOUSE CALLS TO GO THROUGH (WITHOUT BUSY SIGNALS)?

- | | |
|------------------------------|-----|
| <input type="checkbox"/> YES | 91% |
| <input type="checkbox"/> NO | 9% |

B. PERMIT AN ACCEPTABLE PERCENTAGE OF WATS CALLS TO GO OUT (WITHOUT BUSY SIGNAL)?

- | | | |
|------------------------------|-----|---|
| <input type="checkbox"/> YES | 64% | *EXCEPT STATE WATS CALLS/LINE FREQUENTLY BUSY |
| <input type="checkbox"/> NO | 36% | |

(8) DO YOU FEEL THAT YOUR ORGANIZATION NEEDS A NEW TELEPHONE SYSTEM?

- | | | |
|-----------|-----|--|
| A. YES | 67% | |
| UNDECIDED | 8% | |
| B. NO | 25% | * NO, BUT WOULD LIKE MORE EFFICIENT AND COST EFFECTIVE SYSTEM. |

(9) IF THE ANSWER TO 8 IS YES, WHY?

SEE TEXT OF REPORT

(10) IF THE ANSWER TO 8 IS YES, HOW SOON?

SEE TEXT OF REPORT

(11) IF THE ANSWER TO 8 IS YES, WHAT WOULD YOU LIKE YOUR SYSTEM TO BE ABLE TO DO?

- 33% A. AREA CODE RESTRICTION
- 42% B. ATTENDANT BUSY LAMP FIELD
- 50% C. ATTENDANT CONFERENCE
- 42% D. ATTENDANT DIRECT STATION SELECTION
- 58% E. ATTENDANT INTERCEPT
- 42% F. ATTENDANT RECALL
- 33% G. AUTOMATIC DIALERS
- 50% H. AUTOMATIC IDENTIFICATION OF OUTWARD DIALING
- 58% I. AUTOMATIC ROUTE SELECTION
- 58% J. CALL FORWARDING
- 58% K. CALL HOLD
- 58% L. CALL WAITING INDICATION
- 67% M. CUSTOMER ADMINISTRATION CENTER (ALLOWS CUSTOMER TO NUMBER CHANGE PHONES AND ALTER FEATURE ACCESS TO PHONES)
- 42% N. DATA PRIVACY
- 67% O. DIRECT-IN-DIALING
- 50% P. HUNTING
- 50% Q. INDIVIDUAL CALL TRANSFER
- 58% R. INTERCOM
- 67% S. POWER FAILURE CAPABILITY
- 58% T. PUSHBUTTON DIALING
- 67% U. TRAFFIC MEASUREMENT
- 58% V. WATS TIMING
- 58% W. QUEUEING

(12) ARE THERE ADDITIONAL COMMENTS THAT YOU WOULD LIKE TO MAKE? IF SO, PLEASE ENTER BELOW.

SEE TEXT OF REPORT

Telecommunications Project Memo

1. Who manages your telephone system?
2. What types of problems have you encountered in managing your telephone system?

<u>Problem</u>	<u>Infrequent</u>	<u>Often</u>	<u>Very Frequent</u>
a. Poor turnaround times for labor orders			
b. Incorrect billings			
c. Inaccurate or misleading information from vendors			
d. Escalating costs			
e. System down-time			
f. System busied out			
g. Inadequate expansion capability			
h. System interference			
i. "Facilities" inadequacy			
j. Other (specify) _____			
k. Other (specify) _____			

3. Has the trend in your management problems become more serious with the passage of time?
4. How has your system grown in the past five years?
5. How long do you feel you can continue functioning with the system you currently possess?
6. Does your organization's telephone system:
 - a. Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
 - b. Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
7. What would you like your telephone system to be able to do?
(See list on following pages) Please consider these features in terms of

Necessary for
Efficiency in
the Department

Terrific Feature
Which Would Make
Life More Pleasant

Unnecessary
or
Unwanted

Telecommunications Project Memo

- a. Area Code Restriction (prevents calls from being directed outside a specified area code)
- b. Attendant Centralized Service (allows all calls to be handled at one central location)
- c. Attendant Conference (Simultaneous connection for up to six parties plus attendant)
- d. Attendant Console (Desk-top position from which attendant handles calls. Provides display which assists in identifying incoming and outgoing calls)
- e. Attendant Direct Station Selection (refers to manner in which operator completes calls)
- f. Attendant Intercept
- g. Attendant Recall
- h. Automatic Dialers
- h(a) Automatic Identification of Outward Dialing (automatic record of toll calls by station)
- i. Automatic Route Selection (selects least expensive trunk for outgoing calls)
- j. Automatic Station Restriction (prevents unauthorized phone calls from vacant rooms)
- k. Call Forwarding (Redirects incoming calls to any other customer-selected station in the system, or redirects incoming calls when station is busy and/or unattended)
- l. Call Hold
- m. Call Park (allows a station user to place a call on hold and regain access to it at another station)
- n. Call Pickup (allows a station user to answer other ringing stations within a pickup group)
- o. Call Transfer (capability of a station to send an incoming call to another station, after first conversing with caller)
- p. Call Waiting (attendant alerts busy party to waiting call)
- q. Customer Administration Center (permits customer to administer station and system features remotely and locally (such as number changes)
- r. Data Communication Access (provides direct-dial access to computer equipment)
- s. Data Privacy (prevents interference on data transmissions--user controlled)
- t. Data Restriction (restricts station for data transmission--software controlled)
- u. Direct Department Calling (handles incoming calls for selected departments without attendant involvement)

Telecommunications Project Memo

- v. Distinctive Ringing (unique patterns allow station users to distinguish various types of calls)
- w. Echo Suppressor (minimized "echo" in system transmission. Used primarily when transmitting data)
- x. Emergency Access to Attendant (priority handling of emergency calls)
- y. Energy Communication Service (permits customer to manage energy use via shedding, cycling, and time-of-day functions)
- z. Executive Override (following a warning tone, a selective user may access an existing two-way conversation)
- aa. Foreign Exchange Access (access to foreign exchange trunks)
- bb. Immediate System Response (quick system reaction to command)
- cc. Individual Call Transfer (capability of a station to send an incoming call to another station, after first conversing with caller)
- dd. Installation Program (clarifies vendor's installation program)
- ee. Intercept Treatment (routes calls which cannot be completed to attendant, tone, or recorded message)
- ff. Intercom System (installed on telephone unit)
- gg. Interconnection Plans (clarifies vendor's plan and responsibility to connect switch to bell network)
- hh. Interface for Long Distance Billing (stores, displays, and prints billing information)
- ii. Line Lockout with Warning (tone warns when station is off hook and holds line out of service)
- jj. Loudspeaker Paging (gives attendant direct (and station user dial) access to paging equipment)
- kk. Message Centers (system capability to call forward multiple circuits to one station)
- ll. Miscellaneous Trunk Restrictions (prohibits dialing to pre-selected trunk groups)
- mm. Power Failure Capability (provides limited service to the exchange system during commercial power failure)
- nn. Privacy and Lockout (denies attendant re-entry on a completed call unless recalled by station user)
- oo. Private Line Termination (optional access to and termination from private networks)

Telecommunications Project Memo

- pp. Protection and Alarms (refers to an alarm configuration for the switch)
- qq. Pushbutton Dialing (self-explanatory)
- rr. Radio Paging Access (allows dial access to customer-provided radio paging equipment)
- ss. Recorded Telephone Dictation Access (to customer's centralized dictation equipment)
- tt. Remote Maintenance, Administration and Traffic System (permits off-site data polling of the PBX by the telephone company)
- uu. Speaker Phones (self-explanatory)
- vv. Speed Dialing (capability for a single digit to represent multiple digits for quicker dialing)
- ww. Station Hunting (allows switch to hunt from a busy circuit to a clear circuit in completion of a call)
- xx. Station Message Detail Recording (records system communication activity)
- yy. Station Restriction Features (control and limit of call usage: fully restricted; inward restriction; origination restriction; outward restriction; termination restriction)
- zz. Station-to-Station Calling (direct dial within system without attendant)
- aaa. System Feature Cancellation (allows for system-wide cancellation of a particular feature)
- bbb. Three-Way Conference Transfer (brings third party into two-way conversation)
- ccc. Timed Recall on Outgoing Calls (outgoing trunk calls are automatically routed to attendant after specified interval)
- ddd. Toll Restriction (restricts direct-dial toll calls)
- eee. Training program (clarifies vendor's training program)
- fff. Traffic Recording Devices (records switching system traffic)
- ggg. Trunk Queueing (automatically notifies users when a previously busy trunk line is available)
- hhh. Trunk Verification by Attendant (attendant can determine working condition of trunk lines)
- iii. Visually Impaired Attendant Service (tactile devices or audible signals on attendant position to allow visually impaired individual to operate an attendant console)
- jjj. WATS (Wide Area Telecommunications Service) Access to or from WATS serving office
- kkk. WATS Timing Device (self-explanatory)

DEPARTMENT OF ADMINISTRATION
TELECOMMUNICATIONS PROJECT



TED SCHWINDEN, GOVERNOR

ROOM 227, SAM W. MITCHELL BUILDING

STATE OF MONTANA

(406) 449-4564

HELENA, MONTANA 59620

To: Selected State of Montana Employees
From: Beverly R. Magley
Survey and Research Analyst
Re: State of Montana Telephone System
Date: May 21, 1981

The Montana Telecommunications Project is currently researching the state's telephone system. In order to gain a thorough understanding of the overall system, we need information on telephone usage from employees throughout Montana.

We have selected persons representing every state department, employed in a wide variety of jobs. You are one of the 500 employees chosen to fill out the enclosed survey questionnaire.

Some employees who receive this may rarely use the telephone in their job capacity; others may use telephones with great frequency. We are interested in the information you return to us regardless of how often you use the state telephone system.

Please fill out the questionnaire immediately, and return it to us in tomorrow's mail. Enclosed is a stamped envelope for your convenience.

Your participation will give us valuable information for our project.

Thank you.

A handwritten signature in cursive script, reading "Beverly R. Magley".

STATE OF MONTANA TELEPHONE SYSTEM
EMPLOYEE QUESTIONNAIRE

May 21, 1981

Department of _____

Division or Agency _____

Your Job Title _____

1. Please circle the average number of times per day that you use the State of Montana telephones.

0-2 3-10 11+

2. What is the average number of out-of-town calls you make per day?

0-2 3-10 11+

3. What types of problems have you encountered when using the state telephone system?

	<u>Infrequent</u>	<u>Often</u>	<u>Very Frequent</u>
a. System out of order	1	2	3
b. System busy	1	2	3
c. System interference	1	2	3
d. Poor turnaround times for labor orders	1	2	3
e. Incorrect billings	1	2	3
f. Inaccurate or misleading information from vendors	1	2	3
g. Escalating costs	1	2	3
h. Inadequate possibilities for expanding system	1	2	3
j. Other (specify)	1	2	3

4. Does your organization's telephone system:

- a. Permit an acceptable percentage of WATS calls to go out (without a busy signal)?

☐ Yes

No ☐

- b. Permit an acceptable percentage of in-house calls to go through (without a busy signal)?

☐ Yes

No ☐

5. Has your telephone system grown in the last five (5) years?

☐ Yes

No ☐

Briefly describe the growth

6. Do you feel that your organization needs a new, or upgraded, telephone system?

☐ Yes

No ☐

If yes, why?

7. How long do you feel you can continue functioning efficiently with the system you currently possess?

1 year

2-3 years

4-5 years

8. What would you like your telephone system to be able to do? (Check as many as would enable you to perform your job most efficiently.)

☐ a. Area code restriction

☐ b. Attendant busy lamp field

(continued on next page)

- ☐ c. Attendant conference
- ☐ d. Attendant direct station selection
- ☐ e. Attendant intercept
- ☐ f. Attendant recall
- ☐ g. Automatic dialers
- ☐ h. Automatic identification of outward dialing
- ☐ i. Automatic route selection (finds cheapest long distance route)
- ☐ j. Call forwarding (capability of a station to have its own incoming calls sent to another station, without conversing with caller)
- ☐ k. Call hold
- ☐ l. Call waiting indication
- ☐ m. Customer administration center (allows customer to number change phones and alter feature access to phones)
- ☐ n. Data privacy
- ☐ o. Direct-in-dialing (refers to a system designed so that calls coming in from the outside world do not have to pass through an operator's position, but instead terminate in the called station)
- ☐ p. Hunting (allows switch to hunt from a busy circuit to a clear circuit in completion of a call)
- ☐ q. Individual call transfer (capability of a station to send an incoming call to another station, after first conversing with caller)
- ☐ r. Intercom
- ☐ s. Power failure capability (refers to switch's strategy of coping with a power failure)
- ☐ t. Pushbutton dialing
- ☐ u. Traffic measurement
- ☐ v. WATS timing
- ☐ w. Queueing (refers to switch's capability to notify users of clear trunks)
- ☐ x. Intercept (system throws calls to dead or unassigned circuits to operator's position)

(continued on next page)

- ☐ y. Out-of-hours arrangements (throws calls after hours to central position)
- ☐ z. Speaker phones
- ☐ aa. Message centers (refers to system capability to call forward multiple circuits to one station)
- ☐ bb. Add-on-conference (capability of a station to add a third party to a conversation, without attendant assistance)
- ☐ cc. Speed dialing (capability for a single digit to represent multiple digits for quicker dialing)
- ☐ dd. System test facilities (refers to switch's capability to be tested for functionality by local administrators)
- ☐ ee. Camp-on (introduces signal to circuit to announce waiting call)
- ☐ ff. Line lockout/tone denial (prevents above, data use)
- ☐ gg. Distinctive ringing (discriminates as to differing call originations)
- ☐ hh. Immediate system response (quick system reaction to command)
- ☐ ii. System feature cancellation (allows for system-wide cancellation of a particular feature)
- ☐ jj. Training program (clarifies vendor's training program)
- ☐ kk. Installation program (clarifies vendor's installation program)
- ☐ ll. Interconnection plans (clarifies vendor's plan and responsibility to connect switch to bell network)

9. Are there any additional comments you would like to make? We welcome your suggestions and comments.

ATTACHMENT
TEN

STATE OF MONTANA TELEPHONE SYSTEM:
USER PERCEPTIONS

PREPARED BY:
BEVERLY R. MAGLEY

JUNE 12, 1981

CONTENTS

	<u>Page</u>
EXECUTIVE SUMMARY	v
INTRODUCTION	1
Existing MSTs	1
Purpose	2
METHODOLOGY	5
RESULTS	11
DISCUSSION	237
RECOMMENDATIONS	244
BIBLIOGRAPHY	246
APPENDIX A INTERVIEW FORMAT	247
APPENDIX B MAILED SURVEY FORM	251

LIST OF FIGURES AND TABLES

<u>Figure</u>		<u>Page</u>
1	Montana State Telephone System	3

<u>Table</u>		
1	Survey Methods	7
2	Distribution of State Employees Participating in the Mailed Survey	9
3	Agency Responses	17
4	Helena Agency Responses	20
5	Out-of-Town Agency Responses	23
6	Personal Interview Responses	26
7	Department of Administration	29
8	Department of Agriculture	34
8a	Helena	37
8b	Butte	40
8c	Great Falls	43
9	State Auditor	47
10	State Board of Education	51
11	Department of Fish, Wildlife and Parks	55
11a	Helena	58
11b	Field Offices	63
12	Fire Training School (Great Falls)	66
13	Office of the Governor	69
14	Department of Health and Environmental Sciences	73
15	Department of Highways	77
15a	Helena	80
15b	Total Out-of-Town	84
15c	Billings	87
15d	Bozeman	90
15e	Butte	93

LIST OF FIGURES AND TABLES
(continued)

<u>Table</u>	<u>Page</u>
15f Glendive	96
15g Great Falls	99
15h Havre	102
15i Lewistown	105
15j Miles City	108
15k Red Lodge	111
16 Department of Institutions	114
16a Helena	117
16b Boulder River School	121
16c Montana State Prison	124
16d Galen State Hospital	127
16e Warm Springs State Hospital	130
17 Department of Justice	133
18 Department of Labor and Industry	137
18a Helena	140
18b Great Falls	144
18c Missoula	147
19 Department of State Lands	150
20 Legislative Branch	154
21 Department of Livestock	157
21a Helena	161
21b Butte	164
22 Department of Military Affairs	167
23 Montana Bureau of Mines and Geology	171
24 Department of Natural Resources and Conservation	174
25 Department of Professional and Occupational Licensing	179
26 Office of the Superintendent of Public Instruction	183
27 Department of Revenue	188
27a Helena	191
27b Total Field Assessors	196
27c Liquor Retail Stores	199

LIST OF FIGURES AND TABLES
(continued)

<u>Table</u>	<u>Page</u>
28 Secretary of State	202
29 Department of Social and Rehabilitation Services	205
29a Helena	208
29b Field Offices	212
30 Office of the Commissioner of Higher Education	215
31 Montana State University	219
32 University of Montana	223
33 Eastern Montana College	227
34 Western Montana College	231
35 Montana College of Mineral Sciences and Technology	234
36 State of Montana Telephone Costs FY 1975-1980	238
37 Agency Telephone Costs FY 1980	239

EXECUTIVE SUMMARY

An overview of the existing Montana State Telephone System is presented. Information and data are obtained using two methods: personal interviews and mail survey questionnaires. Nineteen department supervisors were interviewed and responded to questions about their telephone systems. Two hundred twelve employees from around the state returned the questionnaire by mail.

Results obtained show that primary problems encountered are "system busy," and "escalating costs." A substantial number of all respondents feel that the difficulty involved in the placing of WATS calls is unacceptable.

Nearly sixty percent feel that they can function efficiently for no more than three years with their existing telephone systems.

Telephony features most in demand are: call waiting indication, call hold, hunting, intercom, automatic route selection, pushbutton dialing, and speed dialing. In addition, individual call transfer and WATS timing were selected by most interviewed respondents.

Detailed responses from individual agencies are provided, as well as responses from universities and colleges located within the State. Further, detailed responses from personal interviews of supervisory personnel located in the Helena area are provided. Composite responses are also given for these areas.

INTRODUCTION

Communication by wire, cable, radio, or other electromagnetic equipment becomes more essential every day. In 1977, Americans used their telephones to place a daily average of 467 million local calls and 38.8 million long-distance calls. Currently, telecommunications capture greater than 60 percent of all U. S. communications revenues, and that figure continues to rise.

Not surprisingly, modern telecommunications play an essential role in state government. The State of Montana, recognizing this importance, as well as the rapidly changing state-of-the-art technologies in the field of telecommunications, created the Montana Telecommunications Project in August of 1980. The Project was charged with three major tasks: 1) to conduct a general inventory of existing Montana telecommunications equipment and facilities; 2) to assess the telecommunications needs of Montana; and 3) to develop a comprehensive plan suggesting directions the state could pursue in attempting to meet those needs. The major telecommunications technologies to be addressed are land/mobile radio systems, telephone systems, data transmission, public radio, and public television. This report deals with the assessment of needs within the Montana State Telephone System.

Existing Montana State Telephone System (MSTS)

The MSTS is administered by the Communications Division of the Department of Administration. Authorization for telephone administration is set forth in Section 2-17-301, Montana Codes Annotated.

The MSTS is a network of approximately 150 interconnected tie lines and WATS (Wide-Area Telecommunications Service) circuits. The tie lines are

individual circuit groups which connect 13 Montana cities and Helena (see Figure 1). Each outlying city or circuit group has a designated three-digit code for access. The WATS circuits are flat-rate long-distance circuits originating in Helena and serving all areas of Montana not connected by tie lines, including the continental United States. The Montana WATS line code is accessed with the three-digit code "151," while the nationwide WATS service uses "171" for access. All WATS calls are logged for statistical analysis.

The MSTS presently operates a dial tandem network consisting of 146 tie lines to various Montana cities, 27 intrastate WATS, and 16 interstate WATS. The system is presently switched through the Helena number five crossbar by use of access code "8" from all authorized satellite stations, followed by the appropriate three-digit code.

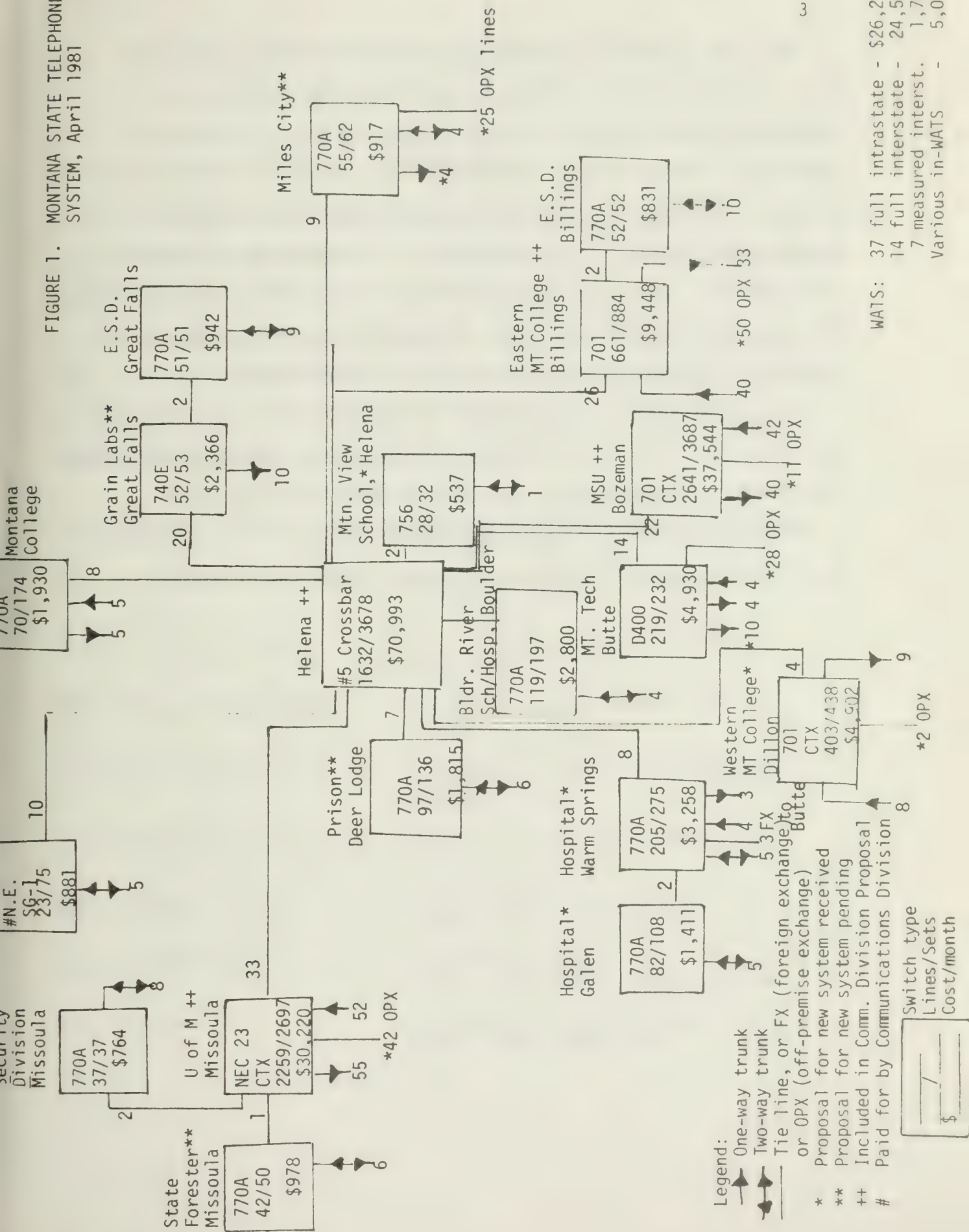
State and local governments in Montana are served by the Mountain Bell network, eight cooperative systems, and nine independent telephone companies. There are over 70,000 telephone stations in Montana and 136 telephone exchanges in addition to the extensive Mountain Bell network.¹ A schematic representation of the MSTS can be examined in Figure 1.

Purpose

A principal goal of the Montana Telecommunications Project is the identification of telephony needs for the MSTS users. Any accurate assessment of needs must come primarily from the agencies themselves. A lack of technical expertise, however, or autonomous operation within an otherwise integrated system, can cause isolation, an inability to reap the benefits of a wide-area information flow, or substandard interagency communication. The Montana Telecommunications Project can aid in coordinating the needs assessment for the state system.

¹"Montana State Telecommunications Project 1980 Report," pp. 34-36.

FIGURE 1. MONTANA STATE TELEPHONE SYSTEM, April 1981



The steps involved in coordinating an MSTS assessment of needs are three. The first step is to obtain an overview of the existing system, including an understanding of the role it now plays and its limitations, capabilities, and usefulness. The second step is to collect detailed information on a divisional or agency basis, determining specific needs and applying technical expertise to the problems. The third step is to make recommendations, taking into consideration specialized needs, cost effectiveness, and systemwide MSTS functions. All possibilities for coordination of resources and maximization of usefulness will be investigated.

This report provides an overview of the existing MSTS. Nineteen state departments participated in this phase, giving personal interviews concerning their current telephone systems and projected needs for future usage.

Additionally, 500 state employees were surveyed by mail to supplement the information obtained from interviewed departmental administrators.

METHODOLOGY

Two survey techniques were selected to achieve the project goals: the personal interview and the mail survey. An analysis of these techniques can be seen in Table 1.

A preliminary meeting was held with a Mountain Bell representative to gain an understanding of its role in the MSTs. Personal interviews were conducted with 19 department directors or their designees. The participating departments or agencies and the respondents are:

Dept. Administration	Ted Whitling, Administrator Communications Division
Dept. Agriculture	Mary Evans, Administrator Centralized Services
Office of State Auditor	Roy L. Phelps, Deputy State Auditor Administrative Division
Dept. Fish, Wildlife & Parks	Sharon Garden, Executive Secretary Director's Office
Office of Governor & Lt. Gov.	Betty Haight, Administrative Assistant David Wanzenreid, Executive Assistant Executive Office
Dept. Health & Env. Sciences	John W. Bartlett, Deputy Director Director's Office
Dept. Highways	John L. Prebil, Administrator Centralized Services Division
Dept. Institutions	John Thomas, Chief Data and Information Services Bureau
Dept. Justice	John Mathews, Assistant Administrator Central Services Division

Dept. Labor and Industry	William G. Groepper, Assistant Deputy Administrator Employment Services Bureau
Dept. State Lands	Kelly Blake, Administrative Officer Commissioner's Office
Dept. Livestock	Dianna Hultman, Administrative Secretary Animal Health Division
Dept. Military Affairs	Kenneth E. Cottrill Centralized Services Admin. Army National Guard Headquarters
Dept. Natural Resources and Conservation	Jerry Smith, Assistant Administrator Centralized Services Division
Dept. Professional and Occupational Licensing	Mary Lou Garrett, Administrative Officer Central Services
Office of the Superintendent of Public Instruction	Marilyn Miller, Administrative Assistant Office of Supt. of Public Instruction
Dept. Revenue	John Clark, Deputy Director Director's Office
Dept. Social and Rehabilitation Services	Joseph E. Winfield, Chief General Services Bureau
Montana University System	Paul Dunham, Director of Planning and Research Office of Commissioner of Higher Education

TABLE 1. SURVEY METHODS

Method	Advantages	Disadvantages
Personal Interviews*	<p>Yields a higher number of returns from a 100 percent sample.</p> <p>The informant is likely to be more correct. Supplementary information can be recorded to clarify the responses.</p> <p>The informant will become oriented to the topic under investigation.</p> <p>The language of the questionnaire can be clarified by the interviewer.</p> <p>The informant can contribute additional and relevant topics.</p>	<p>Costs of labor and transportation are excessive for large samples.</p> <p>Poorly trained interviewers can distort or bias the returns.</p> <p>The organization of interviewers, supervisors and planners is more complex than with other survey methods.</p> <p>The interview and transportation takes more time than with other methods.</p> <p>The block of interview time must be convenient for the informant.</p>
Mail Surveys**	<p>Wider distribution in less time.</p> <p>No interviewer bias.</p> <p>Centralized Control from one office with built-in controls.</p> <p>Better likelihood of a thoughtful reply particularly if historic data is needed for an adequate response.</p> <p>Lower cost of labor and transportation.</p> <p>Questions may be answered at the convenience of the informant.</p>	<p>The problem of the nonrespondent affects survey accuracy.</p> <p>Follow-up mailings may be required for an acceptable response.</p> <p>Questionnaire may be too long or too difficult to insure a high level of confidence in the data.</p> <p>Misinterpretations may go undetected and unrealized.</p> <p>No control over the quality of the informant.</p> <p>Questions must be very carefully standardized and self-explanatory.</p> <p>Checks on the honesty and reliability of the return are difficult to devise.</p> <p>Unsatisfactory or incomplete questionnaires are difficult to correct.</p> <p>Written answers may be misinterpreted.</p>

* For additional information see: Charles S. Mayer, "Data Collection Methods: Personal Interviews," Handbook of Marketing Research, ed. Robert Ferber (New York: McGraw-Hill, 1974), pp. 2-82 to 2-89.

** For additional information see: Paul L. Erdos, Professional Mail Surveys (New York: McGraw-Hill, 1974), pp. 22-74.

In the week preceding the interview, each respondent received a memorandum which confirmed the time and date of the interview, outlined the purpose of the interview, and provided a detailed agenda for the interview. (See Appendix A for a copy of the memorandum.) This ensured adequate time for preliminary deliberation or information-gathering by the respondent.

The information collected from the interview followed the guidelines set forth by the Telecommunications Project Director. Some clarification of items or rewording of questions was done where necessary.

All interviews were conducted by one interviewer in a face-to-face situation. Meetings were conducted in the respondent's office or a nearby conference room, ensuring a minimum of interruption. A verbal description of the Telecommunications Project and its goals was given, followed by a brief explanation of this project's purpose. The format outlined in the memorandum was adhered to, and the interview concluded with a summary discussion of the department's long-term projected telephony needs.

All answers were recorded as the interview progressed. At times questions or items needed to be clarified for the respondent. Some answers were read back to the respondent to confirm the accuracy of the recorded statement.

The mail survey was conducted concurrently. The interview questionnaire was revised and shortened slightly to accommodate the different conditions which arise from collecting information by mail (see Appendix B). However, similar information was collected with both survey techniques.

Five hundred state employees were selected; the survey was mailed to them on May 21, 1981. One hundred twenty of the recipients are employed at the state universities and colleges. An effort was made to select the most representative sample possible, within the limitations imposed by available data. Table 2 shows the employee distribution of the mailed survey.

TABLE 2. DISTRIBUTION OF STATE EMPLOYEES PARTICIPATING IN MAILED SURVEY

Agency	Number of Employees	Number Selected for Mail Survey	Number of Returned Surveys
Legislature	144	4	1
Governor's Office	58	2	1
Secretary of State	29	1	1
Auditor	52	1	0
Supt. Public Instruction	146	8	5
Crime Control	20	1	0
Justice	481	16	8
Public Service Regulation	39	1	0
Public Education	10	3	3
Deaf and Blind	121	2	0
Historical Society	39	3	0
Fish and Game	448	19	7
Health	292	6	5
Highways	1955	63	35
Livestock	131	5	5
Natural Resources	393	20	6
Revenue	1000	37	17
Administration	437	22	12
Agriculture	97	3	3
Institutions	177	7	3
Boulder River School	465	14	4
Center for the Aged	127	3	0
Eastmont	93	7	0
Galen	258	10	4
Mountain View	71	4	0
Pine Hills	128	4	0
Prison	273	13	1
Swan River	28	2	0
Veterans Home	64	2	0
Warm Springs	597	11	2
Community Affairs	127	2	0
Labor and Industry	865	28	12
Military Affairs	31	1	1
SRS	1037	42	19
Mines and Geology		1	1
MSU		45	14
U of M		35	22
EMC		25	17
WMC		10	2
MT Tech		10	4
TOTAL		507	212

All responses to the mailed questionnaire received by June 9, 1981 were tabulated. Returns were analyzed to obtain the following information:

Total: Agency Responses

Total: Helena Agency Responses

Total: Out-of-town Agency Responses

Total: Responses of Personal Interviews

Individual Agency Responses:

a) Helena only

b) Out-of-town totals

c) Individual out-of-town agencies

d) Individual college and university totals

Raw figures are presented for each response category. Percentages were calculated for final tabulations of grouped data.

Any pertinent comments written by survey respondents are presented with their agency's sheets.

College and university responses are kept separate from all other totals. Each of these organizations has a unique system and the data is best presented individually.

Individual statements and observations made at the personal interviews is presented with that agency's Helena data.

RESULTS

The mailed questionnaire was returned by 212 employees. Fifty-nine are employed by state colleges and universities, 93 are employed by Helena agencies, and 60 represent out-of-town state agencies.

The tabulated survey results are presented in Tables 3-35. Table 3 represents the total of all responses excluding colleges and universities. Table 4 is the total of all Helena agency responses, and Table 5 is the total of all field office, or out-of-town agency responses. Of the agency questionnaires received, 42 percent of the respondents use the telephone 11 or more times each day. An additional 36 percent indicate that they use the telephone 3-10 times per day. This is a very high percentage (78%) of all employees returning the survey who use the telephone on a regular basis (3 or more times/day) and would be familiar with its existing functions.

"System busy" is the most frequent problem encountered (38% responded "Often" and 26% responded "Very frequently"), followed by a concern with "Escalating costs." Twenty percent of all employees note "Often" for that category and an additional 13 percent note "Very frequently." "System interference" is the third most problematic area, with 15 percent responding "Often" and 7 percent responding "Very frequent." All other problems in Question #3 have 80-95 percent of the responses in the "Infrequent" category.

Question #4 asks if an acceptable percentage of a) WATS calls, and b) in-house calls can go through. Sixty-six percent respond "Yes" for WATS calls,

and 86 percent respond "Yes" for in-house calls. One-third (33%) of the employees respond that they are dissatisfied with the percentage of WATS calls that get through without a busy signal.

In Question #5, 72 percent indicate that their organization's telephone system has grown in the past five years. Sixty-three percent feel that a new or upgraded telephone system is unnecessary (Question #6). Question #7 has three response categories. Twenty percent indicate that they could function efficiently for only one year with their existing system. Thirty-nine percent indicate "2-3 years" and 41 percent respond "4-5 years."

Question #8 lists 38 telephone system features. All of the responses were summed up, and the percentages represent
$$\frac{\text{individual item}}{\text{sum}} .$$

Items most in demand by respondents are: (l) call waiting indication (7%), (k) call hold (6%), (p) hunting (6%), (r) intercom (6%), (i) automatic route selection (5%), (t) pushbutton dialing (5%), and (cc) speed dialing (5%). Four percent note (j) call forwarding, (q) individual call transfer, and (bb) add-on conference. Three percent indicate (b) attendant busy lamp field, (g) automatic dialers, (o) direct-in-dialing, (v) WATS timing, (w) queueing, and (ee) camp-on. No other category received more than 2 percent of the responses.

Total responses from Helena agencies are as follows. Thirty-seven percent use the telephone 3-10 times each day, and 49 percent use it 11 or more times. Together, that is 86 percent. Sixty percent say they call long distance 3 or more times each day. Problems encountered "Very Frequently" are "System busy" (26%) and "Escalating costs" (22%). Problems encountered "Often" are "System busy" (43%), "Escalating costs" (23%), and "System interference" (16%). Other problems received 89-92 percent "Infrequent" responses.

Question #4a received 67 percent "Yes," while #4b received 89 percent "Yes." Seventy-eight percent respond "Yes" for system growth, and 59 percent think that a new or upgraded telephone system is necessary.

Responses to Question #7 are: 26 percent - "1 year," 42 percent - "2-3 years," and 32 percent "4-5 years" for efficient system functioning.

Items in Question #8 receiving the most demand are (l) call waiting indication (7%), (i) automatic route selection (6%), (k) call hold (6%), (p) hunting (6%), (r) intercom (6%), (t) pushbutton dialing (6%), (cc) speed dialing (6%), (q) individual call transfer (5%), (j) call forwarding (4%), (w) traffic measurement (4%), (w) queueing (4%), (bb) add-on conference (4%), and (ee) camp-on (4%). Three percent indicate (b) attendant busy lamp field, (o) direct-in-dialing, (v) WATS timing, (y) out-of-hours arrangements, and (z) speaker phones. No other item received more than 2 percent of the responses.

Total responses for out-of-town agencies are as follows. Question #1: 33 percent "0-2," 35 percent "3-10," and 32 percent "11+." This adds up to 67 percent of the respondents using the telephone 3 or more times daily. Only 27 percent are calling long distance 3 or more times daily. The problem cited as "Most Frequent" is "System busy" (24%). "Often" encountered problems are "System busy" (30%), "Escalating costs" (15%) and "System interference" (14%). Other problems are encountered "Infrequently" by 91-99 percent of the respondents.

Question #4a received 64 percent "Yes" for acceptability of WATS calls without a busy signal, and Question #4b has 79 percent "Yes" for in-house calls. Sixty-three percent indicate system growth, and 70 percent indicate that a new or upgraded system is not needed. Responses to Question #7 are: 10 percent "1 year," 35 percent "2-3 years," and 55 percent "4-5 years."

Items in Question #8 are as follows: (k) call hold, (l) call waiting indication, and (p) hunting each receive 6 percent. Five percent items are (r) intercom, (t) pushbutton dialing, and (i) automatic route selection. Add-on conference (b) and (cc) speed dialing have 4 percent each, and 3 percent each are: (b) attendant busy lamp field, (c) attendant conference, (g) automatic dialers, (j) call forwarding, (o) direct-in-dialing, (q) individual call transfer, (s) power failure capability, (v) WATS timing, (x) intercept, (gg) distinctive ringing, and (jj) training program.

Table 6 displays the results obtained from personal interviews with the 19 Helena-based department representatives. Very few variations in answers or perceptions are evident. The only "Very Frequent" problem is "Escalating costs." About one-half of the interview respondents feel that the WATS line is busy an unacceptable percentage of the time, and three-fourths feel that in-house calls are not busy too often.

Question #8 items selected by 15 or more respondents as being necessary features are: (k) call hold, (q) individual call transfer, (r) intercom, (t) pushbutton dialing, and (v) WATS timing. Features selected by 6-8 representatives include: (c) attendant conference, (j) call forwarding, (w) queueing, (aaa) attendant centralized service and (eee) call pickup. Call waiting indication (l), (n) data privacy, (cc) speed dialing and (kk) installation program are selected by 5 persons. Other features receiving 3 or 4 requests are: (h) automatic identification of outward dialing, (m) customer administration center, (o) direct-in-dialing, (p) hunting, (s) power failure capability, (x) intercept, (z) speaker phones, (aa) message centers, (bb) add-on-conference, (dd) system test facilities, (ff) line lockout/tone denial, (gg) distinctive ringing, (ii) system feature cancellation, (jj) training program, (ll) interconnection plans,

(ccc) interface for long-distance calling, (ddd) call park, (fff) call transfer, (iii) line lockout with warning, (jjj) loudspeaker, and (ppp) data communication access. No other items were selected by more than 2 people as being "Necessary."

Results are also presented in detailed form, categorized by agency and by location. These are presented in Tables 7 through 30.

University and college responses are in Tables 31-35, presented individually.

Montana State University respondents are primarily concerned with "System busy" and with "Escalating costs." Access to WATS lines is not as acceptable as access to in-house lines; the system has grown in the past 5 years; and very few respondents feel the need for a new or upgraded system. Automatic route selection (i), (q) individual call transfer, (j) call forwarding, (k) call hold, (p) hunting, (r) intercom, (t) pushbutton dialing, and (z) speaker phones are selected by 4 or more of the 14 respondents.

Twenty-two University of Montana employees returned the questionnaire. "System busy" and "Escalating costs" are problems, as are "System interference," "Incorrect billing," and "Inaccurate or misleading information from vendors." WATS line accessibility is viewed as inadequate by 6 respondents, in-house lines appear acceptable. The system has grown in the past 5 years and 10 respondents feel that a new or upgraded system is needed. Six employees feel they can function efficiently with the existing system for only one year. Seven state "2-3 years," and eight "4-5 years." Features selected by seven or more respondents are: (b) attendant busy lamp field, (d) attendant direct station selection, (g) automatic dialers, (i) automatic route selection, (j) call forwarding, (k) call hold, (l) call waiting indication, (p) hunting, (q) individual call transfer, (r) intercom, (t) pushbutton dialing, (v) WATS timing, (w) queueing, (y) out-of-hours arrangements, (z) speaker phones, (bb) add-on-conference, and (cc) speed dialing.

Seventeen employees of Eastern Montana College returned the questionnaire. There, "System busy" is the prime concern. "System interference," "Escalating costs," "Inadequate possibilities for expanding system," "Poor turnaround time for labor" are also listed as Very Frequent problems.

Five respondents are dissatisfied with accessibility of WATS lines, but only one finds in-house call lines too busy. The system has grown, and 9 employees feel that a new or upgraded telephone system is necessary. Five want it in "1 year," eight can function efficiently "2-3 years," and only four selected "4-5 years."

Features selected by six or more respondents are: (b) automatic route selection, (j) call forwarding, (k) call hold, (l) call waiting indication, (p) hunting, (q) individual call transfer, (r) intercom, (t) pushbutton dialing, (y) out-of-hours arrangements, (z) speaker phones, and (bb) add-on-conference.

Western Montana College employees returned only 2 questionnaires. Both respondents are heavy telephone users (11+ times/day). The only concern indicated is "System busy," but neither feel that it is busy an unacceptable percentage of the time. One respondent feels the need for a new or upgraded system within a year. Features selected by both are: (f) attendant recall, (j) call forwarding, (l) call waiting, (q) individual call transfer, (t) pushbutton dialing, (y) out-of-hours arrangements and (gg) distinctive ringing.

Montana College of Mineral Sciences and Technology has four respondents. Two are 11+ times/day telephone users. Only two problems are indicated, "System busy" and "System interference." One respondent feels that WATS accessibility is inadequate. The telephone system has grown, and all four respondents feel the need for a new or upgraded system. But all also indicate that they can function efficiently for "4-5 years" with their present system. Speed dialing (cc) is the only feature selected by more than one person.

TABLE 3 TELEPHONY NEEDS ASSESSMENT RESPONSE TOTALS:

17

CATEGORY _____ TOTAL: AGENCY RESPONSES (excepting universities and colleges)

TOTAL NUMBER OF PARTICIPANTS 153

	0-2	%	3-10	%	11+	%	
1.	32	22	54	36	63	42	Average number of times per day that you use the State of Montana telephones
2.	81	53	69	45	3	2	Average number of out-of-town calls you make per day
	1	%	2	%	3	%	
3.							Problems encountered when using state telephone system:
a	120	90	9	7	4	3	System out of order
b	51	36	54	38	36	26	System busy
c	106	78	21	15	9	7	System interference
d	98	90	5	5	5	5	Poor turnaround times for labor orders
e	80	93	4	5	2	2	Incorrect billings
f	86	95	4	4	1	1	Inaccurate or misleading information from vendor
g	64	67	19	20	13	13	Escalating costs
h	68	82	9	11	6	7	Inadequate possibilities for expanding system
	Yes	%	No	%			
4.							Does your organization's telephone system:
a	87	66	45	34			Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	125	86	20	14			Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.	90	72	35	28			Has your telephone system grown in last 5 years?
6.	51	37	87	63			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	%	2-3 yrs	%	4-5 yrs	%	
7.	25	20	50	39	53	41	How long do you feel you can continue functioning efficiently with the system you currently possess?

Telephony Needs Assessment Response Totals

	<u>Mail Survey %</u>		
8a	7	1	Area code restriction
b	26	3	Attendant busy lamp field
c	18	2	Attendant conference
d	10	1	Attendant direct station selection
e	6	1	Attendant intercept
f	13	2	Attendant recall
g	24	3	Automatic dialers
h	12	2	Automatic identification of outward dialing
i	42	5	Automatic route selection
j	29	4	Call forwarding
k	47	6	Call hold
l	50	7	Call waiting indication
m	8	1	Customer administration center
n	13	2	Data privacy
o	22	3	Direct-in-dialing
p	45	6	Hunting
q	34	4	Individual call transfer
r	46	6	Intercom
s	15	2	Power failure capability
t	41	5	Pushbutton dialing
u	9	1	Traffic measurement
v	21	3	WATS timing
w	25	3	Queueing
x	15	2	Intercept
y	17	2	Out-of-hours arrangements
z	19	23	Speaker phones
aa	9	1	Message centers
bb	35	4	Add-on-conference
cc	41	5	Speed dialing
dd	7	1	System test facilities
ee	25	3	Camp-on

(continued)

Telephony Needs Assessment Response Totals

	Mail Survey	%	
ff	3	41	Line lockout/tone denial
gg	17	2	Distinctive ringing
hh	5	41	Immediate system response
ii	3	41	System feature cancellation
jj	19	2	Training program
kk	7	1	Installation program
ll	5	41	Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	%	No	%
36	51	34	49

TABLE 4 TELEPHONY NEEDS ASSESSMENT RESPONSE TOTALS:

20

CATEGORY HELENA AGENCIESTOTAL NUMBER OF PARTICIPANTS 93

	0-2	%	3-10	%	11+	%	
1.	13	14	34	37	45	49	Average number of times per day that you use the State of Montana telephones
2.	37	40	54	58	2	2	Average number of out-of-town calls you make per day
	1	%	2	%	3	%	
3.							Problems encountered when using state telephone system:
a	74	89	6	7	3	4	System out of order
b	28	31	39	43	24	26	System busy
c	65	77	14	16	6	7	System interference
d	58	91	2	3	4	6	Poor turnaround times for labor orders
e	45	90	3	6	2	4	Incorrect billings
f	49	92	3	6	1	2	Inaccurate or misleading information from vendor
g	31	55	13	23	12	22	Escalating costs
h	39	76	7	14	5	10	Inadequate possibilities for expanding system
	Yes	%	No	%			
4.							Does your organization's telephone system:
a	59	67	29	33			Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	77	89	10	11			Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.	58	78	16	22			Has your telephone system grown in last 5 years?
6.	35	41	50	59			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	%	2-3 yrs	%	4-5 yrs	%	
7.	20	26	32	42	25	32	How long do you feel you can continue functioning efficiently with the system you currently possess?

Telephony Needs Assessment Response Totals

	Mail Survey	%	
8a	4	41	Area code restriction
b	18	3	Attendant busy lamp field
c	10	2	Attendant conference
d	4	41	Attendant direct station selection
e	3	41	Attendant intercept
f	9	2	Attendant recall
g	15	3	Automatic dialers
h	7	1	Automatic identification of outward dialing
i	29	6	Automatic route selection
j	20	4	Call forwarding
k	30	6	Call hold
l	34	7	Call waiting indication
m	5	1	Customer administration center
n	8	2	Data privacy
o	13	3	Direct-in-dialing
p	30	6	Hunting
q	27	5	Individual call transfer
r	33	6	Intercom
s	8	2	Power failure capability
t	28	6	Pushbutton dialing
u	4	41	Traffic measurement
v	13	3	WATS timing
w	19	4	Queueing
x	6	1	Intercept
y	13	3	Out-of-hours arrangements
z	13	3	Speaker phones
aa	7	1	Message centers
bb	23	4	Add-on-conference
cc	30	6	Speed dialing
dd	4	41	System test facilities
ee	19	4	Camp-on

(continued)

Telephony Needs Assessment Response Totals

	Mail Survey	%	
ff	2	41	Line lockout/tone denial
gg	9	2	Distinctive ringing
hh	3	41	Immediate system response
ii	2	41	System feature cancellation
jj	12	2	Training program
kk	4	41	Installation program
ll	2	41	Interconnection plans

TABLE 5. TELEPHONY NEEDS ASSESSMENT RESPONSE TOTALS:

23

CATEGORY _____ TOTAL: OUT-OF-TOWN AGENCIES (excepting universities and colleges)

TOTAL NUMBER OF PARTICIPANTS 60

	0-2	%	3-10	%	11+	%	
1.	19	33	20	35	18	32	Average number of times per day that you use the State of Montana telephones
2.	44	73	15	25	1	2	Average number of out-of-town calls you make per day
	1	%	2	%	3	%	
3.							Problems encountered when using state telephone system:
a	46	92	3	6	1	2	System out of order
b	23	46	15	30	12	24	System busy
c	41	80	7	14	3	6	System interference
d	40	91	3	7	1	2	Poor turnaround times for labor orders
e	35	97	1	3	-		Incorrect billings
f	37	97	1	3	-		Inaccurate or misleading information from vendor
g	33	83	6	15	1	2	Escalating costs
h	29	91	2	6	1	3	Inadequate possibilities for expanding system
	Yes	%	No	%			
4.							Does your organization's telephone system:
a	28	64	16	36			Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	38	79	10	21			Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.	32	63	19	37			Has your telephone system grown in last 5 years?
6.	16	30	37	70			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	%	2-3 yrs	%	4-5 yrs	%	
7.	5	10	18	35	28	55	How long do you feel you can continue functioning efficiently with the system you currently possess?

Telephony Needs Assessment Response Totals

	<u>Mail</u>	<u>%</u>	
	<u>Survey</u>		
8a	3	1	Area code restriction
b	8	3	Attendant busy lamp field
c	8	3	Attendant conference
d	6	2	Attendant direct station selection
e	3	1	Attendant intercept
f	4	2	Attendant recall
g	9	3	Automatic dialers
h	5	2	Automatic identification of outward dialing
i	13	5	Automatic route selection
j	9	3	Call forwarding
k	17	6	Call hold
l	16	6	Call waiting indication
m	3	1	Customer administration center
n	5	2	Data privacy
o	9	3	Direct-in-dialing
p	15	6	Hunting
q	7	3	Individual call transfer
r	13	5	Intercom
s	7	3	Power failure capability
t	13	5	Pushbutton dialing
u	5	2	Traffic measurement
v	8	3	WATS timing
w	6	2	Queueing
x	9	3	Intercept
y	4	2	Out-of-hours arrangements
z	6	2	Speaker phones
aa	2	1	Message centers
bb	12	4	Add-on-conference
cc	11	4	Speed dialing
dd	3	1	System test facilities
ee	6	2	Camp-on

(continued)

Telephony Needs Assessment Response Totals

	Mail Survey	%	
ff	1	41	Line lockout/tone denial
gg	8	3	Distinctive ringing
hh	2	1	Immediate system response
ii	1	41	System feature cancellation
jj	7	3	Training program
kk	3	1	Installation program
ll	3	1	Interconnection plans

TABLE 6. TELEPHONY NEEDS ASSESSMENT RESPONSE TOTALS:

26

CATEGORY TOTAL: PERSONAL INTERVIEW RESPONSESTOTAL NUMBER OF PARTICIPANTS 19

	0-2	%	3-10	%	11+	%	
1.							Average number of times per day that you use the State of Montana telephones
2.							Average number of out-of-town calls you make per day
	1	%	2	%	3	%	
3.							Problems encountered when using state telephone system:
a	17		2		0		System out of order
b	13		3		3		System busy
c	16		2		1		System interference
d	17		1		1		Poor turnaround times for labor orders
e	18		1		0		Incorrect billings
f	17		2		0		Inaccurate or misleading information from vendor
g	0		0		19		Escalating costs
h	16		1		2		Inadequate possibilities for expanding system
	Yes	%	No	%			
4.							Does your organization's telephone system:
a	10		9				Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	15		4				Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.							Has your telephone system grown in last 5 years?
6.							Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	%	2-3 yrs	%	4-5 yrs	%	
7.	5		2		12		How long do you feel you can continue functioning efficiently with the system you currently possess?

	<u>Necessary</u>	<u>Very Desirable</u>	
8a	2	-	Area code restriction
b	-	-	Attendant busy lamp field
c	6	3	Attendant conference
d	-	-	Attendant direct station selection
e	2	1	Attendant intercept
f	2	2	Attendant recall
g	-	4	Automatic dialers
h	3	3	Automatic identification of outward dialing
i	2	1	Automatic route selection
j	7	2	Call forwarding
k	16	-	Call hold
l	5	1	Call waiting indication
m	3	2	Customer administration center
n	5	-	Data privacy
o	4	-	Direct-in-dialing
p	3	1	Hunting
q	15	-	Individual call transfer
r	15	-	Intercom
s	3	2	Power failure capability
t	15	-	Pushbutton dialing
u	2	-	Traffic measurement
v	15	-	WATS timing
w	8	3	Queueing
x	3	-	Intercept
y	-	-	Out-of-hours arrangements
z	4	2	Speaker phones
aa	3	1	Message centers
bb	4	-	Add-on-conference
cc	5	2	Speed dialing
dd	4	1	System test facilities
ee	1	-	Camp-on

(continued)

Telephony Needs Assessment Response Totals

	<u>Necessary</u>	<u>Very Desirable</u>	
ff	3	-	Line lockout/tone denial
gg	4	2	Distinctive ringing
hh	1	-	Immediate system response
ii	3	1	System feature cancellation
jj	4	-	Training program
kk	5	-	Installation program
ll	3	-	Interconnection plans
aaa	6	1	Attendant centralized service
bbb	1	2	Attendant console
ccc	3	1	Interface for long-distance calling
ddd	3	-	Call park
eee	6	-	Call pickup
fff	3	2	Call transfer
ggg	2	-	Emergency access to attendant
hhh	1	-	Executive override
iii	3	1	Line lockout with warning
jjj	3	2	Loudspeaker
kkk	2	1	Miscellaneous trunk restrictions
lll	-	3	Radio paging
mmm	2	3	Recorded telephone dictation access
nnn	1	-	Timed recall on outgoing calls
ooo	0	2	Station restriction features
ppp	4	1	Data communication access
qqq	2	-	Data restriction
rrr	1	-	Private line terminal

TABLE 7 SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION ADMINISTRATION

1979-80 Telephone Expenditures \$72,072.36

Interview Respondent Ted Whitling

Job Title Administrator, Communications Division

Number of Questionnaires Mailed 22

Number of Questionnaires Returned 12 (Helena agencies)

-- (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	2	4	5	Average number times per day you use State of Montana telephones
2.	7	4		Average number out-of-town calls you make per day
	1	2	3	
3a	9*	1		Problems encountered when using state telephone system
b	6*	4	2	System out of order
c	8	2*		System busy
d	5*		1	System interference
e	4*			Poor turnaround times for labor orders
f	4	1*		Incorrect billings
g	4	1		Inaccurate or misleading information from vendors
h	3	1*	1	Escalating costs
	Yes	No		
4a	10	2*		Inadequate possibilities for expanding system
b	12*			Does your organization's telephone system:
5.	8			Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
6.	8	4		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
	1 yr	2-3 yrs	4-5 yrs	
7.	5*	4	2	Has your telephone system grown in last 5 years?
				Do you feel that your organization needs a new, or upgraded, telephone system?
				How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	-	*		Area code restriction
b	6			Attendant busy lamp field
c	2	*		Attendant conference
d				Attendant direct station selection
e	1	*		Attendant intercept
f	1	*		Attendant recall
g	1			Automatic dialers
h		*		Automatic identification of outward dialing
i	3	*		Automatic route selection
j	2	*		Call forwarding
k	5	*		Call hold
l	5	*		Call waiting indication
m	2	*		Customer administration center
n		*		Data privacy
o	4	*		Direct-in-dialing
p	5	*		Hunting
q	4	*		Individual call transfer
r	7	*		Intercom
s		*		Power failure capability
t	6	*		Pushbutton dialing
u		*		Traffic measurement
v	1	*		WATS timing
w	1	*		Queueing
x		*		Intercept
y	2	*		Out-of-hours arrangements
z	5	*		Speaker phones
aa	1	*		Message centers
bb	2	*		Add-on-conference
cc	5		*	Speed dialing
dd		*		System test facilities
ee	4			Camp-on
ff		*		Line lockout/tone denial
gg	2	*		Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1	*		Immediate system response
ii		*		System feature cancellation
jj	2			Training program
kk	1	*		Installation program
ll	1	*		Interconnection plans
	aaa	*		Attendant centralized service
	bbb	*		Attendant console
	ccc		*	Interface for long-distance calling
	ddd	*		Call park
	eee	*		Call pickup
	fff	*		Call transfer
	ggg		*	Emergency access to attendant
	hhh		*	Executive override
	iii	*		Line lockout with warning
	jjj	*		Loudspeaker
	kkk			Miscellaneous trunk restrictions
	lll			Radio paging
	mmm			Recorded telephone dictation access
	nnn			Timed recall on outgoing calls
	ooo		*	Station restriction features
	ppp			Data communication access
	qqq			Data restriction
	rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
4	1

Mail Survey Comments

ADMINISTRATION

Telephone not used very often; job doesn't require it.

Need better com line system.

Data: The division is responsible for administering the teleprocessing data network. Currently approximately 75 separate bills are received each month. A combined statement for the data circuits would reduce significantly the amount of clerical work required to monitor and pay the monthly charge.

Voice: Difficult to determine validity of invoice. We are not billed from telephone company. Invoice initiated by Comm. Division - in totals only.

Improve the method for handling incoming emergency calls--i.e., data line out of service. Routing calls from central point to individual station.

Agencies are required to budget for communication costs to be incurred over a two-year period. Rate increases are authorized to be effective at any time. With the size of our expenditures for voice and data, a significant increase can cause a significant impact on our budget.

System effective for my purposes.

I have a phone in my office (supervisor). In the working section there is one phone for 30-40 people.

System becoming inadequate--can't handle out-of-town calls, especially on first access.

Operators don't always pick up on a transfer signal. Incoming callers that need to be transferred to another office are often hung up on.

If we are on a line and we get another call, the receptionist should get a busy signal when she rings us.

Trying to contact someone is difficult when one out of five people are on another line and you can't get through the com-line.

Configuration of office space requires some system modifications.

To handle outgoing calls need PA system in building.

Personal Interview Comments

Telephone System Manager(s) Communications Division

Has the trend in management problems become more serious over time?

Yes

Has your telephone system grown in the past five years?

Growth has paralleled increases in employees. Telephone usage has increased as travel is decreased.

What, if any, changes in the department do you expect?

None anticipated.

Additional comments:

After the 9/81 rate increase, the existing equipment will be obsolete relative to new equipment cost effectiveness and flexibility.

DEPARTMENT OR ORGANIZATION AGRICULTURE: TOTAL

1979-80 Telephone Expenditures _____

Interview Respondent Mary Evans

Job Title Administrator, Centralized Services

Number of Questionnaires Mailed 3

Number of Questionnaires Returned 1 (Helena agencies)

2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	2			Average number times per day you use State of Montana telephones
2.	2			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2*			System out of order
b	2*			System busy
c	2*			System interference
d	2		*	Poor turnaround times for labor orders
e	2*			Incorrect billings
f	1*	1		Inaccurate or misleading information from vendors
g	1	1	*	Escalating costs
h	2*			Inadequate possibilities for expanding system
	Yes	No		
4a	2*			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1*	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		2		Has your telephone system grown in last 5 years?
6.		2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h		*		Automatic identification of outward dialing
i	1			Automatic route selection
j		*		Call forwarding
k				Call hold
l				Call waiting indication
m		*		Customer administration center
n		*		Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s	1			Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w		*		Queueing
x	1			Intercept
y	1			Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc		*		Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

TABLE 8a. SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION AGRICULTURE (HELENA)1979-80 Telephone Expenditures \$26,550.23Number of Questionnaires Mailed 3

Number of Questionnaires Returned 1 (Helena agencies)

2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.				Average number times per day you use State of Montana telephones
2.				Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d			1	Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g			1	Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.				Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.				How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h	1			Automatic identification of outward dialing
i				Automatic route selection
j	1			Call forwarding
k				Call hold
l				Call waiting indication
m	1			Customer administration center
n	1			Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w	1			Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc	1			Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

TABLE 8b. SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION AGRICULTURE (BUTTE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 3

Number of Questionnaires Returned 1 (Helena agencies)

2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1			Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f		1		Inaccurate or misleading information from vendors
g		1		Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b		1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		1		Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.				How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x	1			Intercept
y	1			Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

DEPARTMENT OR ORGANIZATION AGRICULTURE (GREAT FALLS)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 3Number of Questionnaires Returned 1 (Helena agencies)
2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1			Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		1		Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i	1			Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Personal Interview Comments

Telephone System Manager(s) Central Services personnel

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

The growth has been small, and in keeping with the increased numbers of employees.

What, if any, changes in the department do you expect?

None anticipated.

Additional comments:

A data terminal has been requested for the Pesticide Division.

WATS out-access seems to be better than in-access.

It takes the capitol operator a long time to answer a call, and makes call transfers unnecessarily long.

47

Number of Questionnaires Returned 0 (Helena agencies)
(Out-of-town agencies)

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.				Average number times per day you use State of Montana telephones
2.				Average number out-of-town calls you make per day
	1	2	3	
3a	*			Problems encountered when using state telephone system
b	*			System out of order
c	*			System busy
d	*			System interference
e	*			Poor turnaround times for labor orders
f	*			Incorrect billings
g			*	Inaccurate or misleading information from vendors
h	*			Escalating costs
				Inadequate possibilities for expanding system
	Yes	No		
4a	*			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	*			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.				Has your telephone system grown in last 5 years?
6.				Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialin
i				Automatic route selection
j				Call forwarding
k		*		Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q		*		Individual call transfer
r		*		Intercom
s				Power failure capability
t		*		Pushbutton dialing
u				Traffic measurement
v		*		WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Personal Interview Comments

Telephone System Manager(s) Deputy State Auditor

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

No significant growth.

What, if any, changes in the department do you expect?

None anticipated.

Additional comments:

The intercom system is unsatisfactory. It rings at all desks but is answerable at only one.

Excepting the intercom, the existing system is very functional and adequate.

1979-80 Telephone Expenditures	\$3,044.93
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Number of Questionnaires Returned 3 (Helena agencies)
_____ (Out-of-town agencies)

	0-2	3-10	11+	
1.	1	2		Average number times per day you use State of Montana telephones
2.	1	2		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b	1		1	System busy
c	2			System interference
d	2			Poor turnaround times for labor orders
e	2	1		Incorrect billings
f	2			Inaccurate or misleading information from vendors
g	1	1		Escalating costs
h	1	1		Inadequate possibilities for expanding system
	Yes	No		
4a	2	1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	2	1		Has your telephone system grown in last 5 years?
6.	3			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	2			How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey		Necessary	Very Desirable	
8a					Area code restriction
b					Attendant busy lamp field
c					Attendant conference
d	1				Attendant direct station selection
e					Attendant intercept
f					Attendant recall
g					Automatic dialers
h					Automatic identification of outward dialing
i	1				Automatic route selection
j					Call forwarding
k	2				Call hold
l	2				Call waiting indication
m					Customer administration center
n					Data privacy
o					Direct-in-dialing
p	1				Hunting
q					Individual call transfer
r	2				Intercom
s	1				Power failure capability
t	1				Pushbutton dialing
u					Traffic measurement
v	1				WATS timing
w	1				Queueing
x	1				Intercept
y					Out-of-hours arrangements
z					Speaker phones
aa					Message centers
bb					Add-on-conference
cc					Speed dialing
dd					System test facilities
ee					Camp-on
ff					Line lockout/tone denial
gg					Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans
aaa			Attendant centralized service
bbb			Attendant console
ccc			Interface for long-distance calling
ddd			Call park
eee			Call pickup
fff			Call transfer
ggg			Emergency access to attendant
hhh			Executive override
iii			Line lockout with warning
jjj			Loudspeaker
kkk			Miscellaneous trunk restrictions
lll			Radio paging
mmm			Recorded telephone dictation access
nnn			Timed recall on outgoing calls
ooo			Station restriction features
ppp			Data communication access
qqq			Data restriction
rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
0	0

Mail Survey Comments

When we get settled in a permanent office, we will probably need an additional line and intercom.

Our department (Museum) will have almost twice the number of staff come July 1st.

Present system will not add any more incoming lines or intercom lines.

DEPARTMENT OR ORGANIZATION FISH, WILDLIFE & PARKS: TOTAL

1979-80 Telephone Expenditures _____

Interview Respondent Sharon Garden

Job Title Executive Secretary, Director's Office

Number of Questionnaires Mailed 19

Number of Questionnaires Returned 4 (Helena agencies)

3 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	3	3	1	Average number times per day you use State of Montana telephones
2.	3	4		Average number out-of-town calls you make per day
3a	1	2	3	Problems encountered when using state telephone system
b	7*			System out of order
c	2*	3	2	System busy
d	5*	2		System interference
e	7*			Poor turnaround times for labor orders
f	6*	1		Incorrect billings
g	7*			Inaccurate or misleading information from vendors
h	6	1	*	Escalating costs
	4*	1		Inadequate possibilities for expanding system
	Yes	No		
4a	3*	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	4*	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	4	3		Has your telephone system grown in last 5 years?
6.	1	6		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	*	3	3	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	1			Attendant busy lamp field
c	1	*		Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f		*		Attendant recall
g	1			Automatic dialers
h	1	*		Automatic identification of outward dialing
i	2	*		Automatic route selection
j		*		Call forwarding
k	2	*		Call hold
l	1	*		Call waiting indication
m		*		Customer administration center
n	1	*		Data privacy
o	1	*		Direct-in-dialing
p	2	*		Hunting
q	2	*		Individual call transfer
r	2	*		Intercom
s				Power failure capability
t	2	*		Pushbutton dialing
u				Traffic measurement
v	2	*		WATS timing
w		*		Queueing
x		*		Intercept
y				Out-of-hours arrangements
z	1	*		Speaker phones
aa		*		Message centers
bb	1	*		Add-on-conference
cc	2	*		Speed dialing
dd		*		System test facilities
ee	1			Camp-on
ff		*		Line lockout/tone denial
gg	1			Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh	1		Immediate system response
ii		*	System feature cancellation
jj		*	Training program
kk		*	Installation program
ll		*	Interconnection plans

aaa		*	Attendant centralized service
bbb			Attendant console
ccc	*		Interface for long-distance calling
ddd	*		Call park
eee			Call pickup
fff			Call transfer
ggg			Emergency access to attendant
hhh			Executive override
iii	*		Line lockout with warning
jjj		*	Loudspeaker
kkk			Miscellaneous trunk restrictions
lll		*	Radio paging
mmm		*	Recorded telephone dictation access
nnn			Timed recall on outgoing calls
ooo			Station restriction features
ppp		*	Data communication access
qqq			Data restriction
rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
	1

DEPARTMENT OR ORGANIZATION FISH, WILDLIFE & PARKS (HELENA)1979-80 Telephone Expenditures \$88,894.83Number of Questionnaires Mailed 19Number of Questionnaires Returned 4 (Helena agencies)3 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1	2	1	Average number times per day you use State of Montana telephones
2.	1	3		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	4			System out of order
b	1	2	1	System busy
c	3	1		System interference
d	4			Poor turnaround times for labor orders
e	4			Incorrect billings
f	4			Inaccurate or misleading information from vendors
g	3	1		Escalating costs
h	2	1		Inadequate possibilities for expanding system
	Yes	No		
4a	2	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	3	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	3	1		Has your telephone system grown in last 5 years?
6.		4		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		2	1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	1			Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h	1			Automatic identification of outward dialing
i	2			Automatic route selection
j				Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n	1			Data privacy
o	1			Direct-in-dialing
p	2			Hunting
q	2			Individual call transfer
r	1			Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v	1			WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z	1			Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh	1		Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes

No

1

Mail Survey Comments

System good as is!

I have two more basic problems with the phone itself: first, the connector box on the wall is always falling off. Second, the cord is always twisting and drives me nuts. How about a recording answering service for after-hours calls?

Miles City. Present system is outdated, WATS interference is frequent, and new intercom system is needed. Out-of-state WATS capability would be beneficial.

Fairfield. Our office does not have WATS or STS capability at this time.

Personal Interview Comments

Telephone System Manager(s) Centralized Services Division

Has the trend in management problems become more serious over time?

The existing system is inadequate, and problems are compounded over the passage of time.

Has your telephone system grown in the past five years?

Office reorganization, increased employees, and physical moves have necessitated adding 4-5 two-way lines.

What, if any, changes in the department do you expect?

None anticipated.

Additional comments:

The FWP headquarters in Kalispell is installing a new telephone system.

Glasgow has no WATS access, which hinders communications.

Personnel would like to have a more efficient MSTS than currently exists.

DEPARTMENT OR ORGANIZATION FISH, WILDLIFE & PARKS (FIELD)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 19

Number of Questionnaires Returned 4 (Helena agencies)

3 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	2	1		Average number times per day you use State of Montana telephones
2.	2	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	3			System out of order
b	1	1	1	System busy
c	2	1		System interference
d	3			Poor turnaround times for labor orders
e	2	1		Incorrect billings
f	3			Inaccurate or misleading information from vendors
g	3			Escalating costs
h	2			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1	2		Has your telephone system grown in last 5 years?
6.	1	2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1	2	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c	1			Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k	1			Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r	1			Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v	1			WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

TABLE 12. SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION FIRE TRAINING SCHOOL (GREAT FALLS)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 1

Number of Questionnaires Returned _____ (Helena agencies)

1 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		1		Average number times per day you use State of Montana telephones
2.		1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b			1	System busy
c			1	System interference
d	1			Poor turnaround times for labor orders
e				Incorrect billings
f				Inaccurate or misleading information from vendors
g			1	Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a		1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	1			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey		
	Necessary	Very Desirable	
8a			Area code restriction
b			Attendant busy lamp field
c	1		Attendant conference
d	1		Attendant direct station selection
e			Attendant intercept
f			Attendant recall
g			Automatic dialers
h			Automatic identification of outward dialing
i	1		Automatic route selection
j			Call forwarding
k			Call hold
l			Call waiting indication
m			Customer administration center
n			Data privacy
o			Direct-in-dialing
p			Hunting
q			Individual call transfer
r			Intercom
s			Power failure capability
t	1		Pushbutton dialing
u			Traffic measurement
v			WATS timing
w			Queueing
x			Intercept
y			Out-of-hours arrangements
z			Speaker phones
aa			Message centers
bb			Add-on-conference
cc	1		Speed dialing
dd			System test facilities
ee			Camp-on
ff			Line lockout/tone denial
gg			Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

Mail Survey Comments

Great Falls: At times (all too frequently) it is almost impossible to get on the system.

8a	Mail Survey		Necessary	Very Desirable	
b	1				Area code restriction
c	1			*	Attendant busy lamp field
d					Attendant conference
e		*			Attendant direct station selection
f				*	Attendant intercept
g				*	Attendant recall
h				*	Automatic dialers
i				*	Automatic identification of outward dialing
j				*	Automatic route selection
k	1	*			Call forwarding
l	1			*	Call hold
m				*	Call waiting indication
n					Customer administration center
o		*			Data privacy
p				*	Direct-in-dialing
q		*			Hunting
r		*			Individual call transfer
s				*	Intercom
t	1	*			Power failure capability
u		*			Pushbutton dialing
v		*			Traffic measurement
w		*			WATS timing
x	1			*	Queueing
y					Intercept
z		*			Out-of-hours arrangements
aa		*			Speaker phones
bb		*			Message centers
cc				*	Add-on-conference
dd				*	Speed dialing
ee		*			System test facilities
ff		*			Camp-on
gg				*	Line lockout/tone denial
					Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii			*	System feature cancellation
jj	*			Training program
kk	*			Installation program
ll	*			Interconnection plans
aaa	*			Attendant centralized service
bbb			*	Attendant console
ccc	*			Interface for long-distance calling
ddd	*			Call park
eee	*			Call pickup
fff			*	Call transfer
ggg				Emergency access to attendant
hhh			*	Executive override
iii	*			Line lockout with warning
jjj				Loudspeaker
kkk				Miscellaneous trunk restrictions
lll			*	Radio paging
mmm			*	Recorded telephone dictation access
nnn			*	Timed recall on outgoing calls
ooo			*	Station restriction features
ppp	*			Data communication access
qqq	*			Data restriction
rrr	*			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No

Personal Interview Comments

Telephone System Manager(s) Executive Assistant

Has the trend in management problems become more serious over time?

Existing system is very satisfactory.

Has your telephone system grown in the past five years?

The Lt. Governor's telephones have been connected to the Governor's. They now have audio conferencing capabilities, and have added 13 telephones.

What, if any, changes in the department do you expect?

None anticipated.

Additional comments:

None.

Number of Questionnaires Returned 5 (Helena agencies)
(Out-of-town agencies)

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.			4	Average number times per day you use State of Montana telephones
2.	1	4		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	5*			System out of order
b	*	2	3	System busy
c	5*			System interference
d	5*			Poor turnaround times for labor orders
e	4*	1		Incorrect billings
f	4*			Inaccurate or misleading information from vendors
g	5		*	Escalating costs
h	3*	1		Inadequate possibilities for expanding system
	Yes	No		
4a	2*	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2*	3		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	3	1		Has your telephone system grown in last 5 years?
6.	4	1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1	3*		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c		*		Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f	1			Attendant recall
g			*	Automatic dialers
h	1			Automatic identification of outward dialing
i	1			Automatic route selection
j	1			Call forwarding
k	3	*		Call hold
l	2			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	3			Hunting
q	1	*		Individual call transfer
r	4	*		Intercom
s				Power failure capability
t	2	*		Pushbutton dialing
u	2			Traffic measurement
v	1	*		WATS timing
w	2		*	Queueing
x	2			Intercept
y	2			Out-of-hours arrangements
z	1	*		Speaker phones
aa				Message centers
bb	2	*		Add-on-conference
cc	1			Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh	1		
ii			
jj	1		
kk			
ll			

Immediate system response

System feature cancellation

Training program

Installation program

Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
3	1

Mail Survey Comments

At times it takes awhile to get out on the system.

A busy signal is encountered on 151 calls most of the time.

The only problem I have with the present system is obtaining an open line for in-state WATS calls. Most of the features listed above would not add to my convenience and I assume would be more costly. I am not familiar with present costs and billing, so I am unable to determine its fairness. I believe all unnecessary "frills" should be minimized to obtain the lowest possible rates.

I answer the phone for the Bureau, handling all incoming calls. We do have a problem with insufficient incoming (and out) lines. However, we will be moving to the Cogswell Building the week of June 8th and will have a new telephone system (Horizon system). The new system should remedy the present deficiencies.

Over 40% of our incoming calls get busy signals.

Personal Interview Comments

Telephone System Manager(s) Central Services

Has the trend in management problems become more serious over time?

They are satisfied with the existing system.

Has your telephone system grown in the past five years?

Maternal and Child Health Services Bureau has added the Horizon system.
Environmental Sciences Division and Hospital and Medical Facilities
Division utilize the Dialog system.

What, if any, changes in the department do you expect?

01 July 81 all of the agencies will be in Cogswell Building.

Additional comments:

Laboratory Division and possibly the entire building needs a loudspeaker system.

DEPARTMENT OR ORGANIZATION HIGHWAYS: TOTAL

1979-80 Telephone Expenditures \$211,289.28

Interview Respondent John L. Prebil

Job Title Administrator, Centralized Services Division

Number of Questionnaires Mailed 63

Number of Questionnaires Returned 15 (Helena agencies)

20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	14	10	9	Average number times per day you use State of Montana telephones
2.	24	9	1	Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	26	3		System out of order
b	7	10	13	System busy
c	21	5		System interference
d	20	2		Poor turnaround times for labor orders
e	14		1	Incorrect billings
f	14	2		Inaccurate or misleading information from vendors
g	13	1	2	Escalating costs
h	15	2	1	Inadequate possibilities for expanding system
	Yes	No		
4a	16	12		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	25	4		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	17	7		Has your telephone system grown in last 5 years?
6.	14	15		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	6	9	11	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	4			Area code restriction
b	7			Attendant busy lamp field
c	5			Attendant conference
d	2			Attendant direct station selection
e	2			Attendant intercept
f	6			Attendant recall
g	7			Automatic dialers
h	2			Automatic identification of outward dialing
i	10			Automatic route selection
j	8			Call forwarding
k	15			Call hold
l	15			Call waiting indication
m	2			Customer administration center
n	5			Data privacy
o	7			Direct-in-dialing
p	12			Hunting
q	8			Individual call transfer
r	15			Intercom
s	4			Power failure capability
t	10			Pushbutton dialing
u	4			Traffic measurement
v	7			WATS timing
w	6			Queueing
x	3			Intercept
y	2			Out-of-hours arrangements
z	3			Speaker phones
aa	2			Message centers
bb	11			Add-on-conference
cc	11			Speed dialing
dd	4			System test facilities
ee	7			Camp-on
ff	1			Line lockout/tone denial
gg	5			Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii	2		System feature cancellation
jj	8		Training program
kk	1		Installation program
ll	1		Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

<u>Yes</u>	<u>No</u>
7	2

TABLE 15a SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION HIGHWAYS (HELENA)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63Number of Questionnaires Returned 15 (Helena agencies)20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	4	5	5	Average number times per day you use State of Montana telephones
2.	10	4	1	Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	10	2		System out of order
b	3	5	6	System busy
c	9	3		System interference
d	9			Poor turnaround times for labor orders
e	4		1	Incorrect billings
f	4	2		Inaccurate or misleading information from vendors
g	3		2	Escalating costs
h	6	1		Inadequate possibilities for expanding system
	Yes	No		
4a	7	6		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	13	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	7	3		Has your telephone system grown in last 5 years?
6.	6	6		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	4	4	4	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	2			Area code restriction
b	3			Attendant busy lamp field
c	2			Attendant conference
d				Attendant direct station selection
e	1			Attendant intercept
f	4			Attendant recall
g	4			Automatic dialers
h	1			Automatic identification of outward dialing
i	6			Automatic route selection
j	4			Call forwarding
k	8			Call hold
l	7			Call waiting indication
m	1			Customer administration center
n	2			Data privacy
o	4			Direct-in-dialing
p	7			Hunting
q	6			Individual call transfer
r	7			Intercom
s	2			Power failure capability
t	7			Pushbutton dialing
u	2			Traffic measurement
v	2			WATS timing
w	4			Queueing
x				Intercept
y	2			Out-of-hours arrangements
z				Speaker phones
aa	2			Message centers
bb	7			Add-on-conference
cc	8			Speed dialing
dd	2			System test facilities
ee	5			Camp-on
ff	1			Line lockout/tone denial
gg	4			Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii	2		System feature cancellation
jj	4		Training program
kk	1		Installation program
ll	1		Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
4	1

Mail Survey Comments

The equipment is either too old, or overloaded, or both.

Little need for above (Question #8) options in my job. For the dept. to operate more efficiently, there are many of the above which could be utilized in different divisions.

Not enough lines for number of persons using phones. Inadequate placement of phones (not in good locations for personnel).

Need more lines with automatic intercept (#8's p)

Cost of old system will become too high.

Easier access to divisions located outside Helena.

Hurry up!

Personal Interview Comments

Telephone System Manager(s) Centralized Services Division and
Maintenance Division

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

Department is cutting 20% of their telephones, due to costs.

What, if any, changes in the department do you expect?

01 July 81 losing Rail Planning Unit and Travel Promotion Bureau to
Dept. of Commerce.

Department has submitted proposed telephony changes, and is waiting for
approval from the Communications Division.

They would like the Dimension system.

Additional comments:

TABLE 15b SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION HIGHWAYS (ALL OUT OF TOWN)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63

Number of Questionnaires Returned 15 (Helena agencies)

20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	10	5	4	Average number times per day you use State of Montana telephones
2.	14	5		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	16	1		System out of order
b	4	5	7	System busy
c	12	2		System interference
d	11	2		Poor turnaround times for labor orders
e	10			Incorrect billings
f	10			Inaccurate or misleading information from vendors
g	10	1		Escalating costs
h	9	1	1	Inadequate possibilities for expanding system
	Yes	No		
4a	9	6		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	12	3		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	10	4		Has your telephone system grown in last 5 years?
6.	8	9		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	2	5	7	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable
8a	2		Area code restriction
b	4		Attendant busy lamp field
c	3		Attendant conference
d	2		Attendant direct station selection
e	1		Attendant intercept
f	2		Attendant recall
g	3		Automatic dialers
h	1		Automatic identification of outward dialing
i	4		Automatic route selection
j	4		Call forwarding
k	7		Call hold
l	8		Call waiting indication
m	1		Customer administration center
n	3		Data privacy
o	3		Direct-in-dialing
p	5		Hunting
q	2		Individual call transfer
r	8		Intercom
s	2		Power failure capability
t	3		Pushbutton dialing
u	2		Traffic measurement
v	5		WATS timing
w	2		Queueing
x	3		Intercept
y			Out-of-hours arrangements
z	3		Speaker phones
aa			Message centers
bb	4		Add-on-conference
cc	3		Speed dialing
dd	2		System test facilities
ee	2		Camp-on
ff			Line lockout/tone denial
gg	1		Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

<u>Yes</u>	<u>No</u>
3	1

DEPARTMENT OR ORGANIZATION HIGHWAYS (BILLINGS)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63

Number of Questionnaires Returned 15 (Helena agencies)

20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	2	2		Average number times per day you use State of Montana telephones
2.	4	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	3			System out of order
b		1	2	System busy
c	3			System interference
d	2			Poor turnaround times for labor orders
e	2			Incorrect billings
f	2			Inaccurate or misleading information from vendors
g	2			Escalating costs
h	1		1	Inadequate possibilities for expanding system
	Yes	No		
4a	1	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	3			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	2	1		Has your telephone system grown in last 5 years?
6.	3			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	2	1		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	1			Attendant busy lamp field
c	1			Attendant conference
d	1			Attendant direct station selection
e	1			Attendant intercept
f	1			Attendant recall
g	1			Automatic dialers
h				Automatic identification of outward dialing
i	1			Automatic route selection
j	1			Call forwarding
k	2			Call hold
l	2			Call waiting indication
m	1			Customer administration center
n	1			Data privacy
o	1			Direct-in-dialing
p	2			Hunting
q	2			Individual call transfer
r	3			Intercom
s	2			Power failure capability
t	2			Pushbutton dialing
u				Traffic measurement
v	3			WATS timing
w				Queueing
x	1			Intercept
y				Out-of-hours arrangements
z	2			Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh	1		Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

Mail Survey Comments

BILLINGS: Phone system outdated.

System was not adequate when installed. Hotline system seems to be very inadequate for the amount of employees using phone.

Present system does not adequately handle in and out calls.

TABLE 15d SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION HIGHWAYS (BOZEMAN)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63Number of Questionnaires Returned 15 (Helena agencies)20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1	1	1	Average number times per day you use State of Montana telephones
2.	1	2		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	3			System out of order
b		2	1	System busy
c	2			System interference
d	2			Poor turnaround times for labor orders
e	2			Incorrect billings
f	2			Inaccurate or misleading information from vendors
g	2			Escalating costs
h	2			Inadequate possibilities for expanding system
	Yes	No		
4a	2			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	2			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		2		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	2			Attendant busy lamp field
c	2			Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	2			Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k	2			Call hold
l	2			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	2			Hunting
q				Individual call transfer
r	2			Intercom
s				Power failure capability
t				Pushbutton dialing
u	2			Traffic measurement
v				WATS timing
w	2			Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc	1			Speed dialing
dd	2			System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh	2			Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	0

DEPARTMENT OR ORGANIZATION HIGHWAYS (BUTTE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63Number of Questionnaires Returned 15 (Helena agencies)20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	2		1	Average number times per day you use State of Montana telephones
2.	3			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	3			System out of order
b	2			System busy
c	2			System interference
d	2			Poor turnaround times for labor orders
e	2			Incorrect billings
f	2			Inaccurate or misleading information from vendors
g	2			Escalating costs
h	2			Inadequate possibilities for expanding system
	Yes	No		
4a	1	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	2	1		Has your telephone system grown in last 5 years?
6.		3		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			3	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	1			Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward diali
i	1			Automatic route selection
j				Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n	1			Data privacy
o	1			Direct-in-dialing
p	1			Hunting
q				Individual call transfer
r	1			Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x	1			Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes No
 1

Mail Survey Comments

BUTTE: Phone system is good.

DEPARTMENT OR ORGANIZATION HIGHWAYS (GLENDAVE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63Number of Questionnaires Returned 15 (Helena agencies)20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		2		Average number times per day you use State of Montana telephones
2.	1	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1	1		System out of order
b		1	1	System busy
c	1	1		System interference
d	1			Poor turnaround times for labor orders
e				Incorrect billings
f				Inaccurate or misleading information from vendors
g			1	Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a		1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		1		Has your telephone system grown in last 5 years?
6.	1	1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable
8a	1		Area code restriction
b	1		Attendant busy lamp field
c			Attendant conference
d	1		Attendant direct station selection
e			Attendant intercept
f	1		Attendant recall
g			Automatic dialers
h	1		Automatic identification of outward dialing
i	1		Automatic route selection
j			Call forwarding
k			Call hold
l	1		Call waiting indication
m			Customer administration center
n	1		Data privacy
o	1		Direct-in-dialing
p			Hunting
q			Individual call transfer
r	1		Intercom
s			Power failure capability
t			Pushbutton dialing
u			Traffic measurement
v	2		WATS timing
w			Queueing
x			Intercept
y			Out-of-hours arrangements
z	1		Speaker phones
aa			Message centers
bb	1		Add-on-conference
cc			Speed dialing
dd			System test facilities
ee			Camp-on
ff			Line lockout/tone denial
gg			Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

TABLE 15g SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION HIGHWAYS (GREAT FALLS)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63Number of Questionnaires Returned 15 (Helena agencies)
20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.			2	Average number times per day you use State of Montana telephones
2.	1	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b			2	System busy
c	1	1		System interference
d	1			Poor turnaround times for labor orders
e				Incorrect billings
f				Inaccurate or misleading information from vendors
g				Escalating costs
h				Inadequate possibilities for expanding system
	Yes	No		
4a	1	1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b		2		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	2			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.				How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k	1			Call hold
l	2			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r	1			Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w	1			Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc				Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes No
2

Mail Survey Comments

GREAT FALLS: We need a better system of transferring calls within this division office complex.

Comment from public: "lines always busy."
Need more than one "talk" line, as it is busy with in-house conversations when calls need to be directed.

DEPARTMENT OR ORGANIZATION HIGHWAYS (HAVRE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63

Number of Questionnaires Returned 15 (Helena agencies)

20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1			Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b			1	System busy
c			1	System interference
d		1		Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g				Escalating costs
h		1		Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system:
				Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		1		Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable
8a			Area code restriction
b			Attendant busy lamp field
c			Attendant conference
d			Attendant direct station selection
e			Attendant intercept
f			Attendant recall
g			Automatic dialers
h			Automatic identification of outward dialing
i			Automatic route selection
j			Call forwarding
k	1		Call hold
l			Call waiting indication
m			Customer administration center
n			Data privacy
o			Direct-in-dialing
p	1		Hunting
q			Individual call transfer
r			Intercom
s			Power failure capability
t			Pushbutton dialing
u			Traffic measurement
v			WATS timing
w			Queueing
x			Intercept
y			Out-of-hours arrangements
z			Speaker phones
aa			Message centers
bb	1		Add-on-conference
cc			Speed dialing
dd			System test facilities
ee			Camp-on
ff			Line lockout/tone denial
gg	1		Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

DEPARTMENT OR ORGANIZATION HIGHWAYS (LEWISTOWN)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63

Number of Questionnaires Returned 15 (Helena agencies)

20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	2			Average number times per day you use State of Montana telephones
2.	2			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b	1	1		System busy
c	2			System interference
d	2			Poor turnaround times for labor orders
e	2			Incorrect billings
f	2			Inaccurate or misleading information from vendors
g	2			Escalating costs
h	2			Inadequate possibilities for expanding system
	Yes	No		
4a	2			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	2			Has your telephone system grown in last 5 years?
6.		2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1	1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i	1			Automatic route selection
j	1			Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey			
		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

DEPARTMENT OR ORGANIZATION HIGHWAYS (MILES CITY)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63Number of Questionnaires Returned 15 (Helena agencies)20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1			Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

DEPARTMENT OR ORGANIZATION HIGHWAYS (RED LODGE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 63

Number of Questionnaires Returned 15 (Helena agencies)

20 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1			Average number times per day you use State of Montana telephones
2.				Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a				System out of order
b				System busy
c				System interference
d				Poor turnaround times for labor orders
e				Incorrect billings
f				Inaccurate or misleading information from vendors
g				Escalating costs
h				Inadequate possibilities for expanding system
	Yes	No		
4a				Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b				Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

TABLE 16 SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION INSTITUTIONS (TOTAL RESPONSE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 77Number of Questionnaires Returned 3 (Helena agencies)11 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	3	6	5	Average number times per day you use State of Montana telephones
2.	9	4		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	8			System out of order
b	4	3	2	System busy
c	10	1		System interference
d	11			Poor turnaround times for labor orders
e	8			Incorrect billings
f	8			Inaccurate or misleading information from vendors
g	5	2		Escalating costs
h	8	1		Inadequate possibilities for expanding system
	Yes	No		
4a	11	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	11	3		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	8	5		Has your telephone system grown in last 5 years?
6.	2	12		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		8	5	How long do you feel you can continue functioning efficiently with the system you currently possess?

Mail Survey		Necessary	Very Desirable	
8a	1			Area code restriction
b	3			Attendant busy lamp field
c	3			Attendant conference
d	2			Attendant direct station selection
e	2			Attendant intercept
f	2			Attendant recall
g	3			Automatic dialers
h	2			Automatic identification of outward dialing
i	5			Automatic route selection
j	6			Call forwarding
k	4			Call hold
l	6			Call waiting indication
m	1			Customer administration center
n	2			Data privacy
o	4			Direct-in-dialing
p	3			Hunting
q	3			Individual call transfer
r	3			Intercom
s	4			Power failure capability
t	3			Pushbutton dialing
u	3			Traffic measurement
v	2			WATS timing
w	3			Queueing
x	2			Intercept
y	4			Out-of-hours arrangements
z	2			Speaker phones
aa	1			Message centers
bb	5			Add-on-conference
cc	7			Speed dialing
dd	1			System test facilities
ee	3			Camp-on
ff	1			Line lockout/tone denial
gg	3			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii	1			System feature cancellation
jj	2			Training program
kk	3			Installation program
ll	2			Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
0	5

TABLE 16a SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION INSTITUTIONS (HELENA)

1979-80 Telephone Expenditures \$97,279.56

Interview Respondent John Thomas

Job Title Chief, Data and Information Services Bureau

Number of Questionnaires Mailed 77

Number of Questionnaires Returned 3 (Helena agencies)

11 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.		2	1	Average number times per day you use State of Montana telephones
2.		2		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	3*			System out of order
b	2	*	1	System busy
c	2*			System interference
d	3*			Poor turnaround times for labor orders
e	1*			Incorrect billings
f	2*		*	Inaccurate or misleading information from vendors
g		1		Escalating costs
h	2*			Inadequate possibilities for expanding system
	Yes	No		
4a	3	*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	3*			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	3			Has your telephone system grown in last 5 yrs?
6.		3		Do you feel that your organization needs a , or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		2	*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	1			Area code restriction
b				Attendant busy lamp field
c		*		Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g			*	Automatic dialers
h				Automatic identification of outward dialing
i	2			Automatic route selection
j	1		*	Call forwarding
k		*		Call hold
l	2			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q		*		Individual call transfer
r				Intercom
s				Power failure capability
t		*		Pushbutton dialing
u				Traffic measurement
v	1	*		WATS timing
w			*	Queueing
x				Intercept
y	1			Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	1	*		Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone den.
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj		*		Training program
kk	1			Installation program
ll				Interconnection plans
aaa			*	Attendant centralized service
bbb			*	Attendant console
ccc				Interface for long-distance calling
ddd				Call park
eee	*			Call pickup
fff				Call transfer
ggg				Emergency access to attendant
hhh				Executive override
iii				Line lockout with warning
jjj				Loudspeaker
kkk				Miscellaneous trunk restrictions
lll				Radio paging
mmm				Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp				Data communication access
qqq				Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
	1

Mail Survey Comments

Present phone system is adequate.

Better in-house communication and call transfer.

Personal Interview Comments

Telephone System Manager(s) Director's Administrative Secretary

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

No significant growth.

What, if any, changes in the department do you expect?

The department is decreasing the number of employees, and will eliminate telephones and lines accordingly.

Additional comments:

The department has requested a "busy study."

The existing system is viewed as adequate.

TABLE 16b SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION INSTITUTIONS (BOULDER RIVER SCHOOL)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 14Number of Questionnaires Returned _____ (Helena agencies)
4 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1	2	1	Average number times per day you use State of Montana telephones
2.	4			Average number out-of-town calls you make per day
3a	1	2	3	Problems encountered when using state telephone system
b		1		System out of order
c	4			System busy
d	4			System interference
e	4			Poor turnaround times for labor orders
f	4			Incorrect billings
g	3	1		Inaccurate or misleading information from vendors
h	3	1		Escalating costs
	Yes	No		Inadequate possibilities for expanding system
4a	2	2		Does your organization's telephone system:
b	2	2		Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
5.	4			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
6.		4		Has your telephone system grown in last 5 years?
	1 yr	2-3 yrs	4-5 yrs	Do you feel that your organization needs a new, or upgraded, telephone system?
7.		2	2	How long do you feel you can continue functioning efficiently with the system you currently possess?

8a	Mail Survey		Necessary	Very Desirable	
b	2				Area code restriction
c	3				Attendant busy lamp field
d	2				Attendant conference
e	1				Attendant direct station selection
f	1				Attendant intercept
g	2				Attendant recall
h	2				Automatic dialers
i	2				Automatic identification of outward dialin
j	3				Automatic route selection
k	2				Call forwarding
l	2				Call hold
m	1				Call waiting indication
n	2				Customer administration center
o	4				Data privacy
p	3				Direct-in-dialing
q	2				Hunting
r	3				Individual call transfer
s	3				Intercom
t	3				Power failure capability
u	2				Pushbutton dialing
v	2				Traffic measurement
w	3				WATS timing
x	2				Queueing
y	3				Intercept
z	2				Out-of-hours arrangements
aa	1				Speaker phones
bb	3				Message centers
cc	3				Add-on-conference
dd	1				Speed dialing
ee	2				System test facilities
ff	1				Camp-on
gg	1				Line lockout/tone denial
					Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii	1			System feature cancellation
jj	2			Training program
kk	1			Installation program
ll	2			Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
0	1

Mail Survey Comments

BOULDER: During Legislature can't get hot lines.

Different ring sounds for phones in offices off of main hallway would be helpful: difficult to identify which phone is ringing out of the office.

DEPARTMENT OR ORGANIZATION INSTITUTIONS (DEER LODGE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 13

Number of Questionnaires Returned _____ (Helena agencies)

1 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		1		Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j	1			Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	1			Hunting
q	1			Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	1			Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

DEPARTMENT OR ORGANIZATION INSTITUTIONS (GALEN STATE HOSPITAL)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 10Number of Questionnaires Returned _____ (Helena agencies)
4 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	2	1	1	Average number times per day you use State of Montana telephones
2.	3	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b		1	1	System busy
c	1	1		System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f				Inaccurate or misleading information from vendors
g				Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	3			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	3	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		4		Has your telephone system grown in last 5 years?
6.	2	2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			4	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	1			Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f	1			Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i	1			Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii			System feature cancellation
jj	1		Training program
kk	1		Installation program
ll			Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes No

1

Mail Survey Comments

GALEN: The Galen State Hospital phone system is under study to be merged with Warm Springs State Hospital as one central switchboard for both agencies (part of GSH and WSSH consolidation).

DEPARTMENT OR ORGANIZATION INSTITUTIONS (WARM SPRINGS STATE HOSPITAL)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 11Number of Questionnaires Returned _____ (Helena agencies)
2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.			2	Average number times per day you use State of Montana telephones
2.	1	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b	1	1		System busy
c	2			System interference
d	2			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	2			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		1		Has your telephone system grown in last 5 years?
6.		2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			2	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e	1			Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j	1			Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q	1			Individual call transfer
r				Intercom
s	1			Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes No

2

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	2	2	4	Average number times per day you use State of Montana telephones
2.	4	4		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	7	*		System out of order
b	4	4	*	System busy
c	8*			System interference
d	5*		1	Poor turnaround times for labor orders
e	3*		1	Incorrect billings
f	4	*	1	Inaccurate or misleading information from vendors
g	2	1	1*	Escalating costs
h	4*		1	Inadequate possibilities for expanding system
	Yes	No		
4a	4	1*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	6*	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	6	1		Has your telephone system grown in last 5 years?
6.	2	4		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1	2	4*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	4			Attendant busy lamp field
c	2			Attendant conference
d	2			Attendant direct station selection
e	1			Attendant intercept
f	1			Attendant recall
g	2	*		Automatic dialers
h	1			Automatic identification of outward dialing
i	4			Automatic route selection
j	3			Call forwarding
k	4*	*		Call hold
l	3			Call waiting indication
m				Customer administration center
n	3			Data privacy
o	2			Direct-in-dialing
p	3			Hunting
q	3	*		Individual call transfer
r	4	*		Intercom
s	2		*	Power failure capability
t	2	*		Pushbutton dialing
u		.		Traffic measurement
v	3	*		WATS timing
w	1	*		Queueing
x	1			Intercept
y	2			Out-of-hours arrangements
z	1			Speaker phones
aa	2			Message centers
bb	2			Add-on-conference
cc	3			Speed dialing
dd	1			System test facilities
ee	2			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	2			Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans
aaa				Attendant centralized service
bbb				Attendant console
ccc				*
ddd				Interface for long-distance calling
eee				Call park
fff				Call pickup
ggg				Call transfer
hhh				Emergency access to attendant
iii				Executive override
jjj				Line lockout with warning
kkk				Loudspeaker
lll				Miscellaneous trunk restrictions
mmm				Radio paging
nnn				*
ooo				Recorded telephone dictation access
ppp				Timed recall on outgoing calls
qqq				Station restriction features
rrr				Data communication access
				Data restriction
				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

		No
1		2

Mail Survey Comments

I need to be able to answer other com-lines. If funding were available, we could update our system.

Personal Interview Comments

Telephone System Manager(s) Central Services Division

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

Montana Highway Patrol, Deer Lodge State Prison and Crime Lab, Missoula have installed new systems within the past 2 years.

Agencies and telephones are more consolidated now that they are all in the Hart Building.

What, if any, changes in the department do you expect?

Nine employees from DCA will be added to the department.

Central Services and the Attorney General will move to the new building in 1982.

Additional comments:

The capability to expand the telephone system within the Hart Building is inadequate.

Telephone access to and from the department and Butte, Missoula, Deer Lodge, and Bozeman is inadequate between 3-5 p.m. weekdays.

The existing system is functional and generally adequate.

DEPARTMENT OR ORGANIZATION LABOR AND INDUSTRY: TOTAL

1979-80 Telephone Expenditures \$42,349.47

Interview Respondent William G. Groepper

Job Title Assistant Deputy Administrator, Employment Services Bureau

Number of Questionnaires Mailed 28

Number of Questionnaires Returned 10 (Helena agencies)

2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.		4	8	Average number times per day you use State of Montana telephones
2.	1	10	1	Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	10*	1	1	System out of order
b	2	8	2*	System busy
c	6*	4	2	System interference
d	8*	1		Poor turnaround times for labor orders
e	10*			Incorrect billings
f	9*			Inaccurate or misleading information from vendors
g	4	1	1*	Escalating costs
h	7	1	*	Inadequate possibilities for expanding system
	Yes	No		
4a	7	3*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	9*	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	8	2		Has your telephone system grown in last 5 years?
6.	5	5		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		7	3*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	1			Area code restriction
b	3			Attendant busy lamp field
c				Attendant conference
d	1			Attendant direct station selection
e				Attendant intercept
f	1			Attendant recall
g	5			Automatic dialers
h	1			Automatic identification of outward dialing
i	1			Automatic route selection
j	1			Call forwarding
k	2	*		Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o	1			Direct-in-dialing
p	3			Hunting
q	2	*		Individual call transfer
r	1	*		Intercom
s				Power failure capability
t	2	*		Pushbutton dialing
u	1			Traffic measurement
v		*		WATS timing
w	3			Queueing
x	1			Intercept
y	1			Out-of-hours arrangements
z	2			Speaker phones
aa	1			Message centers
bb	2			Add-on-conference
cc	4			Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj	1			Training program
kk	1			Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

<u>Yes</u>	<u>No</u>
3	3

TABLE 18a SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION LABOR AND INDUSTRY (HELENA)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 28Number of Questionnaires Returned 10 (Helena agencies)2 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		3	7	Average number times per day you use State of Montana telephones
2.		9	1	Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	8	1	1	System out of order
b	2	6	2	System busy
c	5	3	2	System interference
d	7			Poor turnaround times for labor orders
e	8			Incorrect billings
f	7			Inaccurate or misleading information from vendors
g	3	1	1	Escalating costs
h	5	1		Inadequate possibilities for expanding system
	Yes	No		
4a	6	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	7	1		Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.	6	2		Has your telephone system grown in last 5 years?
6.	4	4		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		5	3	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	2			Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f	1			Attendant recall
g	3			Automatic dialers
h				Automatic identification of outward dialing
i	1			Automatic route selection
j	1			Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	2			Hunting
q	1			Individual call transfer
r				Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v				WATS timing
w	2			Queueing
x				Intercept
y	1			Out-of-hours arrangements
z	1			Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	3			Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey			
		Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
3	3

Mail Survey Comments

System adequate.

In office such as Billings East, the PBX system is old and slow.

Offices system relatively new, more efficient than some of the offices' systems. Pushbutton dialing would provide faster calls which are important in serving a high volume of public traffic looking for jobs.

Ability to relocate desks is a necessity because of changing priorities. The com key system's charge for moving phones is prohibitive to accomplish movement for needed relocation of desks within building.

Horizon Telephone System works great!

Getting the party connected to the correct person in a timely manner. Distinguishing if they're on the phone or if it's off the hook.

Need more lines.

My job calls for extensive use of phone for calls throughout the state and out of state. The volume and nature of the work does not allow time to wait to get into the WATS system and many times it is busy. Therefore it requires direct dialing on commercial lines. Our in-house system appears to be fairly modern, but it still gets overloaded.

Need capability to tape conversations, enable to take statements over phone.

Personal Interview Comments

Telephone System Manager(s) Each division manages its own telephone system.

Has the trend in management problems become more serious over time?

The two new Horizon systems have lessened the number of lines and the number of problems.

Has your telephone system grown in the past five years?

Two Horizon systems have been installed servicing the Employment Services Bureau and the Unemployment Insurance Bureau.

What, if any, changes in the department do you expect?

None anticipated.

Additional comments:

Management of the telephone system would be more efficient if the Public Service Commission would supply rate approval projections.

An efficient state-owned interdepartmental intercom system could reduce the number of lines leased from Mountain Bell, and would speed up communications.

The possible leasing of existing data transmission lines for voice transmission should be explored.

A telephone resource person or publication needs to be made available to agencies, supplying up-to-date information on state-of-the-art technologies and cost effectiveness of equipment features.

TABLE 18b SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION LABOR AND INDUSTRY (GREAT FALLS)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 28Number of Questionnaires Returned 10 (Helena agencies)1 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.			1	Average number times per day you use State of Montana telephones
2.		1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b		1		System busy
c	1			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a		1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	1			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	1			Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d	1			Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h	1			Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	1			Hunting
q	1			Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w	1			Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	1			Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

DEPARTMENT OR ORGANIZATION LABOR AND INDUSTRY (MISSOULA)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 28Number of Questionnaires Returned 10 (Helena agencies)
1 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		1		Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b		1		System busy
c		1		System interference
d		1		Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g				Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1		How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	1			Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o	1			Direct-in-dialing
p				Hunting
q				Individual call transfer
r	1			Intercom
s				Power failure capability
t	1			Pushbutton dialing
u	1			Traffic measurement
v				WATS timing
w				Queueing
x	1			Intercept
y				Out-of-hours arrangements
z	1			Speaker phones
aa	1			Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj				Training program
kk	1			Installation program
ll	1			Interconnection plans

DEPARTMENT OR ORGANIZATION LANDS

1979-80 Telephone Expenditures \$22,358.69

Interview Respondent Kelly Blake

Job Title Administrative Officer

Number of Questionnaires Mailed 0

Number of Questionnaires Returned (Helena agencies)

 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.				Average number times per day you use State of Montana telephones
2.				Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	*			System out of order
b	*			System busy
c	*			System interference
d	*			Poor turnaround times for labor orders
e	*			Incorrect billings
f	*			Inaccurate or misleading information from vendors
g			*	Escalating costs
h	*			Inadequate possibilities for expanding system
	Yes	No		
4a		*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b		*		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.				Has your telephone system grown in last 5 years?
6.				Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	*			How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j		*		Call forwarding
k		*		Call hold
l		*		Call waiting indication
m		*		Customer administration center
n		*		Data privacy
o		*		Direct-in-dialing
p		*		Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w		*		Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc		*		Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

Personal Interview Comments

Telephone System Manager(s) Centralized Services

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

Two in-lines, and approximately three out-lines have been installed. The growth reflects the addition of employees to the department.

What, if any, changes in the department do you expect?

01 July 81 Forestry Division will transfer from DNRC to Dept. Lands. Most of the 118 employees are located in Missoula, and the telephony changes will be centered there.

Additional comments:

A "busy study" was completed recently and results indicate that the existing number of telephone lines is marginally acceptable.

The department does receive complaints about the in-lines being frequently busy.

1979-80 Telephone Expenditures	\$29,145.92
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Number of Questionnaires Returned 1 (Helena agencies)
(Out-of-town agencies)

	0-2	3-10	11+	
1.		1		Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b		1		System busy
c		1		System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g		1		Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey		Necessary	Very Desirable	
8a					Area code restriction
b	1				Attendant busy lamp field
c					Attendant conference
d					Attendant direct station selection
e					Attendant intercept
f					Attendant recall
g					Automatic dialers
h					Automatic identification of outward dialing
i					Automatic route selection
j					Call forwarding
k	1				Call hold
l	1				Call waiting indication
m					Customer administration center
n					Data privacy
o					Direct-in-dialing
p					Hunting
q					Individual call transfer
r	1				Intercom
s					Power failure capability
t	1				Pushbutton dialing
u					Traffic measurement
v					WATS timing
w					Queueing
x					Intercept
y					Out-of-hours arrangements
z	1				Speaker phones
aa					Message centers
bb	1				Add-on-conference
cc					Speed dialing
dd					System test facilities
ee	1				Camp-on
ff					Line lockout/tone denial
gg					Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

DEPARTMENT OR ORGANIZATION LIVESTOCK: TOTAL1979-80 Telephone Expenditures \$42,576.22Interview Respondent Diana HultmanJob Title Administrative Secretary, Animal Health DivisionNumber of Questionnaires Mailed 5Number of Questionnaires Returned 2 (Helena agencies)
3 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	2	2	1	Average number times per day you use State of Montana telephones
2.	4	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2*	1		System out of order
b	1*	3		System busy
c	2*	2		System interference
d	1*			Poor turnaround times for labor orders
e	3*			Incorrect billings
f	1*			Inaccurate or misleading information from vendors
g	1	1	*	Escalating costs
h	1*			Inadequate possibilities for expanding system
	Yes	No		
4a	3	1*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	3*			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	4	1		Has your telephone system grown in last 5 years?
6.	1	2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1	2*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c			*	Attendant conference
d				Attendant direct station selection
e			*	Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j		*		Call forwarding
k		*		Call hold
l		*		Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q		*		Individual call transfer
r		*		Intercom
s		*		Power failure capability
t	1	*		Pushbutton dialing
u				Traffic measurement
v		*		WATS timing
w	1	*		Queueing
x				Intercept
y				Out-of-hours arrangements
z	1		*	Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc				Speed dialing
dd		*		System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg		*		Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans
aaa	*			Attendant centralized service
bbb				Attendant console
ccc	*			Interface for long-distance calling
ddd	*			Call park
eee	*			Call pickup
fff	*			Call transfer
ggg				Emergency access to attendant
hhh				Executive override
iii	*			Line lockout with warning
jjj			*	Loudspeaker
kkk				Miscellaneous trunk restrictions
lll				Radio paging
mmm	*			Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp				Data communication access
qqq				Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
	1

Personal Interview Comments

Telephone System Manager(s) Central Services Division

Has the trend in management problems become more serious over time?
Not significantly. The problems are static.

Has your telephone system grown in the past five years?
Added 5-6 telephone sets with increased employees.

What, if any, changes in the department do you expect?
Subject to approval: 01 Aug 81 several state and federal offices will move to adjacent offices. Some telephones will also be relocated.

Additional comments:

151 WATS access is inadequate, especially on Mondays and Fridays.
Existing system is adequate with the possible addition of one line.

TABLE 21a SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION LIVESTOCK (HELENA)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 5Number of Questionnaires Returned 2 (Helena agencies)
_____ (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	2			Average number times per day you use State of Montana telephones
2.	2			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a				System out of order
b		1		System busy
c			1	System interference
d				Poor turnaround times for labor orders
e				Incorrect billings
f				Inaccurate or misleading information from vendors
g				Escalating costs
h				Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1	1		Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w	1			Queueing
x				Intercept
y				Out-of-hours arrangements
z	1			Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc				Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

DEPARTMENT OR ORGANIZATION LIVESTOCK (BUTTE)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 5

Number of Questionnaires Returned _____ (Helena agencies)

3 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		2	1	Average number times per day you use State of Montana telephones
2.	2	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2	1		System out of order
b	1	2		System busy
c	2		1	System interference
d	1			Poor turnaround times for labor orders
e	3			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1	1		Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	2	1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	3			Has your telephone system grown in last 5 years?
6.	1	1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.		1	1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey		Necessary	Very Desirable	
8a					Area code restriction
b					Attendant busy lamp field
c					Attendant conference
d					Attendant direct station selection
e					Attendant intercept
f					Attendant recall
g	1				Automatic dialers
h					Automatic identification of outward dialing
i					Automatic route selection
j					Call forwarding
k					Call hold
l					Call waiting indication
m					Customer administration center
n					Data privacy
o					Direct-in-dialing
p					Hunting
q					Individual call transfer
r					Intercom
s					Power failure capability
t	1				Pushbutton dialing
u					Traffic measurement
v					WATS timing
w					Queueing
x					Intercept
y					Out-of-hours arrangements
z					Speaker phones
aa					Message centers
bb					Add-on-conference
cc					Speed dialing
dd					System test facilities
ee					Camp-on
ff					Line lockout/tone denial
gg					Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes No

1

Mail Survey Comments

BUTTE: Phone is noisy when in use (static). At some stations, a busy signal occurs when the party picks up the phone on the other end.

WATS line is rather noisy; also it gives a busy signal about 50-60% of the time, even before number has been completely dialed. Also, from our WATS line we are unable to call any station in the Boulder area.

I am satisfied with current telephone system.

DEPARTMENT OR ORGANIZATION MILITARY AFFAIRS1979-80 Telephone Expenditures \$59,881.75Interview Respondent Kenneth E. CottrillJob Title Administrator, Centralized Services, Army National Guard HeadquartersNumber of Questionnaires Mailed 1Number of Questionnaires Returned 1 (Helena agencies) (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.			1	Average number times per day you use State of Montana telephones
2.		1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1*			System out of order
b	*	1		System busy
c	1*			System interference
d	1*			Poor turnaround times for labor orders
e	1*			Incorrect billings
f	1*			Inaccurate or misleading information from vendors
g			1*	Escalating costs
h	1*			Inadequate possibilities for expanding system
	Yes	No		
4a	1	*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1*			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	1			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h			*	Automatic identification of outward dialing
i				Automatic route selection
j	1			Call forwarding
k		*		Call hold
l				Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q	1	*		Individual call transfer
r	1	*		Intercom
s	1	*		Power failure capability
t		*		Pushbutton dialing
u				Traffic measurement
v	1	*		WATS timing
w				Queueing
x				Intercept
y	1			Out-of-hours arrangements
z				Speaker phones
aa	1			Message centers
bb				Add-on-conference
cc				Speed dialing
dd		*		System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable
hh			Immediate system response
ii	*		System feature cancellation
jj			Training program
kk	*		Installation program
ll			Interconnection plans
aaa			Attendant centralized service
bbb			Attendant console
ccc			Interface for long-distance calling
ddd			Call park
eee			Call pickup
fff			Call transfer
ggg			Emergency access to attendant
hhh			Executive override
iii			Line lockout with warning
jjj			Loudspeaker
kkk			Miscellaneous trunk restrictions
lll			Radio paging
mmm			Recorded telephone dictation access
nnn			Timed recall on outgoing calls
ooo	*		Station restriction features
ppp			Data communication access
qqq			Data restriction
rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	

Personal Interview CommentsTelephone System Manager(s) Administrator of Centralized Services

Has the trend in management problems become more serious over time?

Costs for the system have increased \$40,000 since 1977, without an appreciable increase in equipment.

Has your telephone system grown in the past five years?

Added a central console, and 5-6 lines. Sets have increased with employee increases.

What, if any, changes in the department do you expect?

Minor internal reorganizational changes are expected.

Investigating possibility of establishing 1-3 central operators to reduce the number of necessary lines.

Additional comments:

The military has units in every Montana county. Phone service to some counties is inadequate. The department is examining the possibility of using radio communications with boosters in place of telephoning.

The military requires touch-tone dialing for their Autovon Service (world-wide military communications).

Access to 151 WATS is never satisfactory.

Short-term hookups, for military or disaster units, are rarely adequate nor able to be installed quickly.

DEPARTMENT OR ORGANIZATION MONTANA BUREAU OF MINES AND GEOLOGY

1979-80 Telephone Expenditures (not available)

Number of Questionnaires Mailed 1

Number of Questionnaires Returned (Helena agencies)

1 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		1		Average number times per day you use State of Montana telephones
2.	1			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	1			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.		1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k				Call hold
l				Call waiting indication
m	1			Customer administration center
n				Data privacy
o				Direct-in-dialing
p	1			Hunting
q				Individual call transfer
r				Intercom
s	1			Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x	1			Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

Mail Survey Comments

Most of the Dimension system's features allow us most of the above capabilities.

Number of Questionnaires Returned 6 (Helena agencies)
(Out-of-town agencies)

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.		2	4	Average number times per day you use State of Montana telephones
2.		6		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	4	1*		System out of order
b	1	4	1*	System busy
c	5	1	*	System interference
d	3	1*		Poor turnaround times for labor orders
e	3*			Incorrect billings
f	3*			Inaccurate or misleading information from vendors
g	1		2*	Escalating costs
h	2		1*	Inadequate possibilities for expanding system
	Yes	No		
4a	5	1*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	4	1*		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	4			Has your telephone system grown in last 5 years?
6.	1	5		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1*	3	2	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h			*	Automatic identification of outward dialing
i				Automatic route selection
j	1			Call forwarding
k	1	*		Call hold
l	1	*		Call waiting indication
m	1			Customer administration center
n		*		Data privacy
o	1			Direct-in-dialing
p	2			Hunting
q	2	*		Individual call transfer
r	1	*		Intercom
s				Power failure capability
t	3	*		Pushbutton dialing
u				Traffic measurement
v		*		WATS timing
w	2	*		Queueing
x			*	Intercept
y	1			Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	2			Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee	2			Camp-on
ff				Line lockout/tone denial
gg		*		Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans
aaa				Attendant centralized service
bbb				Attendant console
ccc				Interface for long-distance calling
ddd				Call park
eee				Call pickup
fff				Call transfer
ggg	*			Emergency access to attendant
hhh			*	Executive override
iii				Line lockout with warning
jjj	*			Loudspeaker
kkk				Miscellaneous trunk restrictions
lll			*	Radio paging
mmm			*	Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp	*			Data communication access
qqq	*			Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	3

Personal Interview Comments

Telephone System Manager(s) Centralized Services Division

Has the trend in management problems become more serious over time?

Increasing costs are significant. The frequency of lines being busy is also a growing problem.

Has your telephone system grown in the past five years?

The department has added 24-40% more employees, with corresponding telephone increases.

The Facility Siting Division equipment is altered constantly as projects change.

What, if any, changes in the department do you expect?

FY 81-82 several divisions will move locations. 01 July 81 Forestry Division is moving from DNRC to Dept. State Lands. Currently examining possibility of adding 8-10 ten-button sets, plus several more lines.

"Busy study" showed the lines busy 40% of the time.

4-5 years the entire department will move into a new building. Currently they occupy 4 different buildings and intra-agency communications are inadequate.

Additional comments:

Interference on lines is a problem. Engineering Bureau of Water Resources Division, and Miles City WATS lines are the most troublesome.

The existing telephone system has been inadequate for 3-4 years already. Immediate changes are necessary.

Mail Survey Comments

For my needs, the present system is adequate. It seems to me that the state phone system should be efficient (which for the most part it is) but I don't think taxpayers should be asked to pay for additional fancy, nice, but unnecessary equipment.

I believe our telephone system has kept up with the need and is fairly adequate at the present time.

Maybe I'm more inexperienced or less knowledgeable regarding the telephone than most, but I really don't know what you're talking about when you use terms like "Data Privacy," "Attendant Busy Lamp Field." For the current size of our office, we seem to have a fairly efficient system. Of course it's always nice to improve with quicker and more efficient methods.

"Com-line" system confusing--at least 3 different sets of lines; creates different call numbers to use depending on line. Also, not nearly enough outside lines.

DEPARTMENT OR ORGANIZATION PROFESSIONAL AND OCCUPATIONAL LICENSING

1979-80 Telephone Expenditures \$16,697.25

Interview Respondent Mary Lou Garrett

Job Title Administrative Officer, Central Services Division

Number of Questionnaires Mailed 0

Number of Questionnaires Returned _____ (Helena agencies)

_____ (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.				Average number times per day you use State of Montana telephones
2.				Average number out-of-town calls you make per day
	1	2	3	
3a				Problems encountered when using state telephone system
b				System out of order
c				System busy
d				System interference
e				Poor turnaround times for labor orders
f				Incorrect billings
g				Inaccurate or misleading information from vendors
h				Escalating costs
				Inadequate possibilities for expanding system
	Yes	No		
4a	*			Does your organization's telephone system:
				Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	*			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.				Has your telephone system grown in last 5 years?
6.				Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	*			How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans
aaa			Attendant centralized service
bbb			Attendant console
ccc			Interface for long-distance calling
ddd			Call park
eee	*		Call pickup
fff	*		Call transfer
ggg			Emergency access to attendant
hhh			Executive override
iii			Line lockout with warning
jjj			Loudspeaker
kkk			Miscellaneous trunk restrictions
lll			Radio paging
mmm			Recorded telephone dictation access
nnn			Timed recall on outgoing calls
ooo			Station restriction features
ppp			Data communication access
qqq			Data restriction
rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c		*		Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j		*		Call forwarding
k		*		Call hold
l		*		Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q		*		Individual call transfer
r		*		Intercom
s				Power failure capability
t		*		Pushbutton dialing
u				Traffic measurement
v		*		WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Personal Interview Comments

Telephone System Manager(s) Central Services

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

Added 1-2 telephone sets.

What, if any, changes in the department do you expect?

01 July 81 Moving location of agency to DCA building.

Additional comment

Existing system is totally inadequate. More lines were recommended 2-3 years ago but the department has not had the funds to install them.

They recommend using * button on telephone set plus code number for easier identification of long distance calls by agency.

(Out-of-town agencies)

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	1	3	1	Average number times per day you use State of Montana telephones
2.	2	3		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	4*			System out of order
b	*	3	1	System busy
c	2	1	1*	System interference
d	2*			Poor turnaround times for labor orders
e	1*			Incorrect billings
f	1*			Inaccurate or misleading information from vendors
g	1		2*	Escalating costs
h	2*			Inadequate possibilities for expanding system
	Yes	No		
4a	3	1*		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	4*			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1	1		Has your telephone system grown in last 5 years?
6.	1	3		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1	1	2*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c	1	*		Attendant conference
d	1			Attendant direct station selection
e				Attendant intercept
f	1		*	Attendant recall
g	1			Automatic dialers
h				Automatic identification of outward dialing
i	4			Automatic route selection
j	1	*		Call forwarding
k		*		Call hold
l	2			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q	2	*		Individual call transfer
r	1	*		Intercom
s	1			Power failure capability
t	2	*		Pushbutton dialing
u				Traffic measurement
v		*		WATS timing
w	1	*		Queueing
x				Intercept
y	1			Out-of-hours arrangements
z	1	*		Speaker phones
aa	1		*	Message centers
bb	1			Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee				Camp-on
ff	1			Line lockout/tone denial
gg	1	*		Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj		*		Training program
kk		*		Installation program
ll		*		Interconnection plans
aaa		*		Attendant centralized service
bbb				Attendant console
ccc				Interface for long-distance calling
ddd				Call park
eee		*		Call pickup
fff		*		Call transfer
ggg				Emergency access to attendant
hhh				Executive override
iii			*	Line lockout with warning
jjj				Loudspeaker
kkk				Miscellaneous trunk restrictions
lll				Radio paging
mmm				Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp				Data communication access
qqq				Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
	1

Personal Interview Comments

Telephone System Manager(s)

Staff Services Manager

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

Added extra lines with increased employees.

What, if any, changes in the department do you expect?

Possible transfers of personnel within the existing buildings.

Additional comments:

Communications Division personnel are currently examining the system.

Immediate changes are necessary; the existing system is inadequate.

Budget planning is inefficient because billings are 1-2 months behind.

Radio broadcasting transmissions are interfering with telephone communications in the 11th Avenue building.

Mail Survey Comments

Line noise: usually acceptable, but is worse on 151 calls. Busy: in-state calls OK, but out-of-state calls often busy. System functions adequately. Addition of the "fancy" features listed under #8 would be handy, but not necessary. If those features can be implemented at little more than current rates, do it! But if cost is much more, it probably isn't worth it. Question: How does this affect data lines?

TABLE 27 SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION	REVENUE (TOTAL)
1979-80 Telephone Expenditures	\$103,506.57
Interview Respondent	John Clark
Job Title	Deputy Director
Number of Questionnaires Mailed	37
Number of Questionnaires Returned	6 (Helena agencies)
	11 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.	4	5	8	Average number times per day you use State of Montana telephones
2.	11	5		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone sys
3a	14*	1	1	System out of order
b	10	3*	3	System busy
c	13*	2	1	System interference
d	15*			Poor turnaround times for labor orders
e	13*	1		Incorrect billings
f	14*			Inaccurate or misleading information from vendors
g	10	3	*	Escalating costs
h	5*		1	Inadequate possibilities for expanding system
	Yes	No		
4a	3*	6		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	9	3*		Permit an acceptable percentage of in-house calls through (without a busy signal)?
5.	5	7		Has your telephone system grown in last 5 years?
6.	3	9		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	2	2	8	How long do you feel you can continue functioning efficiently with the system you currently possess

	Mail Survey	Necessary	Very Desirable	
8a	1	*		Area code restriction
b	1			Attendant busy lamp field
c	1			Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h	1			Automatic identification of outward dialing
i	3			Automatic route selection
j				Call forwarding
k	2			Call hold
l	3			Call waiting indication
m				Customer administration center
n	1			Data privacy
o	1			Direct-in-dialing
p	4			Hunting
q	1			Individual call transfer
r	2	*		Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z	1			Speaker phones
aa				Message centers
bb	2			Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj	1			Training program
kk	1			Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	1

DEPARTMENT OR ORGANIZATION REVENUE (HELENA)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 37

Number of Questionnaires Returned 6 (Helena agencies)

11 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		2	4	Average number times per day you use State of Montana telephones
2.	3	3		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	4*		1	System out of order
b	1	2*	2	System busy
c	3*			System interference
d	4*			Poor turnaround times for labor orders
e	2*	1		Incorrect billings
f	3*			Inaccurate or misleading information from vendors
g		2	*	Escalating costs
h	1*		1	Inadequate possibilities for expanding system
	Yes	No		
4a	2*	3		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	4	1*		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	2	2		Has your telephone system grown in last 5 years?
6.	2	2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1	*	2	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	1	*		Area code restriction
b	1			Attendant busy lamp field
c	1			Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h				Automatic identification of outward dialing
i	1			Automatic route selection
j				Call forwarding
k				Call hold
l	1			Call waiting indication
m				Customer administration center
n	1			Data privacy
o	1			Direct-in-dialing
p	1			Hunting
q	1			Individual call transfer
r	2	*		Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x				Intercept
y				Out-of-hours arrangements
z	1			Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	2			Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj	1			Training program
kk	1			Installation program
ll				Interconnection plans
aaa				Attendant centralized service
bbb				Attendant console
ccc				Interface for long-distance calling
ddd				Call park
eee				Call pickup
fff				Call transfer
ggg				Emergency access to attendant
hhh				Executive override
iii				Line lockout with warning
jjj	*			Loudspeaker
kkk				Miscellaneous trunk restrictions
lll				Radio paging
mmm				Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp				Data communication access
qqq				Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	1

Personal Interview Comments

Telephone System Manager(s) Audit and Accounting Division and
individual division administrators

Has the trend in management problems become more serious over time?
Not significantly. The problems are static.

Has your telephone system grown in the past five years?
Added some WATS access to Child Support Enforcement outlying offices.
Property Tax division added a paging system.

What, if any, changes in the department do you expect?
Expect to phase out data transmission access line from Bozeman and will use Dept. of Administration access.
The Liquor Division is currently soliciting proposals for a data transmission system which will link the 140 retail stores to a centralized inventory control and management system.

Additional comments:

The income tax toll-free line is busied out too much. Additional lines and personnel are needed on a seasonal basis.
Motor Fuels Tax Division and Miscellaneous Tax Division need more lines.
Income Tax Division has requested a paging system.
Most systems are adequate, with exception of the above.

Mail Survey Comments

Com-key system installed three years ago is very adequate at this time. Works very well for this dept.

The WATS system needs improvement, but the Legal Division has a sufficient physical system.

I could tell you in a layman's terms what I'm looking for in a telephone system, but I don't think I've conveyed these needs in this questionnaire.

Some of the telephones within the division are not connected with the intercom system.

TABLE 27b SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION _____ REVENUE (FIELD ASSESSORS) _____

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 37

Number of Questionnaires Returned 6 (Helena agencies)

8 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	1	3	4	Average number times per day you use State of Montana telephones
2.	5	2	1	Average number out-of-town calls you make per day
3a	1	2	3	Problems encountered when using state telephone system
b	7	1	1	System out of order
c	7	1		System busy
d	8			System interference
e	8			Poor turnaround times for labor orders
f	8			Incorrect billings
g	7	1		Inaccurate or misleading information from vendors
h	1			Escalating costs
	Yes	No		Inadequate possibilities for expanding system
4a	1	3		Does your organization's telephone system:
b	4	2		Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
5.	3	3		Permit an acceptable percentage of in-house calls through (without a busy signal)?
6.	1	5		Has your telephone system grown in last 5 years?
	1 yr	2-3 yrs	4-5 yrs	Do you feel that your organization needs a new, or upgraded, telephone system?
7.	1	2	5	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h	1			Automatic identification of outward dialing
i	2			Automatic route selection
j				Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	3			Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
				Intercept
				Out-of-hours arrangements
				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc				Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Mail Survey Comments

BUTTE: Telephone system adequate.

GLASGOW: Need hold button.

BIG HORN: System new and adequate.

TABLE 27c SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION REVENUE (LIQUOR RETAIL STORES)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 37

Number of Questionnaires Returned 6 (Helena agencies)

3 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	3			Average number times per day you use State of Montana telephones
2.	3			Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	3			System out of order
b	2	1		System busy
c	3			System interference
d	3			Poor turnaround times for labor orders
e	3			Incorrect billings
f	3			Inaccurate or misleading information from vendors
g	3			Escalating costs
h	3			Inadequate possibilities for expanding system
	Yes	No		
4a				Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.		2		Has your telephone system grown in last 5 years?
6.		2		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			1	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable
8a			Area code restriction
b			Attendant busy lamp field
c			Attendant conference
d			Attendant direct station selection
e			Attendant intercept
f			Attendant recall
g			Automatic dialers
h			Automatic identification of outward dialing
i			Automatic route selection
j			Call forwarding
k	1		Call hold
l	1		Call waiting indication
m			Customer administration center
n			Data privacy
o			Direct-in-dialing
p	1		Hunting
q			Individual call transfer
r			Intercom
s			Power failure capability
t			Pushbutton dialing
u			Traffic measurement
v			WATS timing
w			Queueing
x			Intercept
y			Out-of-hours arrangements
z			Speaker phones
aa			Message centers
bb			Add-on-conference
cc			Speed dialing
dd			System test facilities
ee			Camp-on
ff			Line lockout/tone denial
gg			Distinctive ringing

	Mail Survey	Necessary		Very Desirable	
hh					Immediate system response
ii					System feature cancellation
jj					Training program
kk					Installation program
ll					Interconnection plans

DEPARTMENT OR ORGANIZATION SECRETARY OF STATE1979-80 Telephone Expenditures \$6,891.12Number of Questionnaires Mailed 1Number of Questionnaires Returned 1 (Helena agencies) (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.			1	Average number times per day you use State of Montana telephones
2.		1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	1			System out of order
b	1			System busy
c	1			System interference
d		1		Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g		1		Escalating costs
h			1	Inadequate possibilities for expanding system
	Yes	No		
4a		1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	1			Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	1			Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1			How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j	1			Call forwarding
k	1			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o				Direct-in-dialing
p	1			Hunting
q	1			Individual call transfer
r	1			Intercom
s				Power failure capability
t				Pushbutton dialing
u				Traffic measurement
v				WATS timing
w	1			Queueing
x				Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb				Add-on-conference
cc				Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg				Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes No

1

TABLE 29 SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION	SOCIAL AND REHABILITATION SERVICES	
1979-80 Telephone Expenditures	\$190,929.24	
Interview Respondent	Joseph E. Winfield	
Job Title	Chief, General Services Bureau	
Number of Questionnaires Mailed	42	
Number of Questionnaires Returned	12	(Helena agencies)
	7	(Out-of-town agencies)

Figures represent tallies obtained from mailed survey

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.		7	12	Average number times per day you use State of Montana telephones
2.	9	10		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	13*	1	2	System out of order
b	7*	6	5	System busy
c	12*	2	2	System interference
d	7*		2	Poor turnaround times for labor orders
e	6	*		Incorrect billings
f	7*			Inaccurate or misleading information from vendors
g	10	3	2*	Escalating costs
h	6*	1		Inadequate possibilities for expanding system
	Yes	No		
4a	11*	9		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	16*	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	14	4		Has your telephone system grown in last 5 years?
6.	3	15		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	5	5	9*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c	1			Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h	2			Automatic identification of outward dialing
i	5			Automatic route selection
j	3			Call forwarding
k	4			Call hold
l	1			Call waiting indication
m	1			Customer administration center
n				Data privacy
o	1			Direct-in-dialing
p	4			Hunting
q	3			Individual call transfer
r	1			Intercom
s	1			Power failure capability
t	2			Pushbutton dialing
u				Traffic measurement
v	2			WATS timing
w	2			Queueing
x	2			Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	2			Add-on-conference
cc	1			Speed dialing
dd				System test facilities
ee	2			Camp-on
ff				Line lockout/tone denial
gg	3			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	5

TABLE 29a SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION SRS (HELENA)

1979-80 Telephone Expenditures _____

Number of Questionnaires Mailed 42

Number of Questionnaires Returned 12 (Helena agencies)

7 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		5	7	Average number times per day you use State of Montana telephones
2.	4	8		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	9	1	1	System out of order
b	4	4	4	System busy
c	9	1	1	System interference
d	6		1	Poor turnaround times for labor orders
e	5			Incorrect billings
f	6			Inaccurate or misleading information from vendors
g	9	2	2	Escalating costs
h	5	1		Inadequate possibilities for expanding system
	Yes	No		
4a	8	7		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	11			Permit an acceptable percentage of in-house calls through (without a busy signal)?
5.	8	3		Has your telephone system grown in last 5 years?
6.	2	10		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	3	5	4	How long do you feel you can continue functioning efficiently with the system you currently possess

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c	1			Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g	1			Automatic dialers
h	2			Automatic identification of outward dialing
i	3			Automatic route selection
j	3			Call forwarding
k	2			Call hold
l	4			Call waiting indication
m	1			Customer administration center
n				Data privacy
o				Direct-in-dialing
p	4			Hunting
q	3			Individual call transfer
r	1			Intercom
s	1			Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v	2			WATS timing
w	2			Queueing
x	1			Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc	1			Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg	1			Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	5

Mail Survey Comments

I did not check any of these, because it sounds like the dimension system through Mountain Bell and this system does not work. I have worked with the dimension system and found it to be a very inadequate system.

I am generally satisfied. WATS lines are much better than they used to be. Sorry I don't understand most of your questions. Most "gadgets" are not worth their cost.

We have quite a few of the above features (Question 8) and are quite happy with everything.

Personal Interview Comments

Telephone System Manager(s) Centralized Services Division

Has the trend in management problems become more serious over time?

Not significantly. The problems are static.

Has your telephone system grown in the past five years?

Added lines and sets as employees increased.

What, if any, changes in the department do you expect?

Installed several toll-free lines to Medical Assistance Program and Aging Services Bureau.

All district offices now have conference capabilities.

Four speaker phone systems have been installed.

Losing 60-70 employees 01 July 81 and gaining several from DCA.

Additional comments:

The existing telephone system is as efficient as is needed.

TABLE 29b SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION SRS (FIELD) (~~Field office respondents were grouped~~
 together as their responses showed few discrepancies.
 1979-80 Telephone Expenditures _____ (Great Falls, Butte,
 Missoula, and Fergus Co.)

Number of Questionnaires Mailed 42

Number of Questionnaires Returned 12 (Helena agencies)

7 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.		2	4	Average number times per day you use State of Montana telephones
2.	5	2		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone sys
3a	4		1	System out of order
b	3	2	1	System busy
c	3	1	1	System interference
d	1		1	Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1	1		Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	3	2		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	5	1		Permit an acceptable percentage of in-house calls through (without a busy signal)?
5.	6	1		Has your telephone system grown in last 5 years?
6.	1	5		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	2		5	How long do you feel you can continue functioning efficiently with the system you currently possess

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c				Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i	2			Automatic route selection
j				Call forwarding
k	2			Call hold
l	1			Call waiting indication
m				Customer administration center
n				Data privacy
o	1			Direct-in-dialing
p				Hunting
q				Individual call transfer
r				Intercom
s				Power failure capability
t	1			Pushbutton dialing
u				Traffic measurement
v				WATS timing
w				Queueing
x	1			Intercept
y				Out-of-hours arrangements
z				Speaker phones
aa				Message centers
bb	1			Add-on-conference
cc				Speed dialing
dd				System test facilities
ee	1			Camp-on
ff				Line lockout/tone denial
gg	2			Distinctive ringing

	Mail Survey	Necessary	Very Desirable	
hh				Immediate system response
ii				System feature cancellation
jj				Training program
kk				Installation program
ll				Interconnection plans

Mail Survey Comments

Great Falls: It's almost impossible to call any station with a 135 or a 128 access code. Much time is wasted trying. This has been reported through the state operator, but the problem hasn't been corrected.

(Out-of-town agencies)

(*) represents response obtained from personal interview

	0-2	3-10	11+	
1.				Average number times per day you use State of Montana telephones
2.				Average number out-of-town calls you make per day
	1	2	3	
3a	*			Problems encountered when using state telephone system
b		*		System out of order
c	*			System busy
d	*			System interference
e	*			Poor turnaround times for labor orders
f	*			Incorrect billings
g			*	Inaccurate or misleading information from vendors
h	*			Escalating costs
	Yes	No		Inadequate possibilities for expanding system
4a	*			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b		*		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.				Has your telephone system grown in last 5 years?
6.				Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			*	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b				Attendant busy lamp field
c			*	Attendant conference
d				Attendant direct station selection
e				Attendant intercept
f				Attendant recall
g				Automatic dialers
h				Automatic identification of outward dialing
i				Automatic route selection
j				Call forwarding
k		*		Call hold
l				Call waiting indication
m			*	Customer administration center
n				Data privacy
o				Direct-in-dialing
p				Hunting
q		*		Individual call transfer
r		*		Intercom
s				Power failure capability
t		*		Pushbutton dialing
u				Traffic measurement
v		*		WATS timing
w			*	Queueing
x				Intercept
y				Out-of-hours arrangements
z			*	Speaker phones
aa				Message centers
bb				Add-on-conference
cc			*	Speed dialing
dd				System test facilities
ee				Camp-on
ff				Line lockout/tone denial
gg			*	Distinctive ringing

Mail Survey	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

aaa	*		Attendant centralized service
bbb	*		Attendant console
ccc			Interface for long-distance calling
ddd			Call park
eee		*	Call pickup
fff		*	Call transfer
ggg			Emergency access to attendant
hhh			Executive override
iii			Line lockout with warning
jjj			Loudspeaker
kkk			Miscellaneous trunk restrictions
lll			Radio paging
mmm			Recorded telephone dictation access
nnn			Timed recall on outgoing calls
ooo		*	Station restriction features
ppp	*		Data communication access
qqq			Data restriction
rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No

Personal Interview CommentsTelephone System Manager(s) Deputy Commissioner for Financial Affairs

Has the trend in management problems become more serious over time?

Yes. The MSTS teleconferencing is too limited, the quality of sound is poor, and the number and location of tie-ins are inadequate.

Has your telephone system grown in the past five years?

The telephone system is larger with increased personnel and after the move from 11th Avenue to current location.

What, if any, changes in the department do you expect?

Expecting to add a few staff members from a federal project.

Additional comments:

Ability to reprogram telephone changes within the offices would save money and is desirable.

WATS access is adequate except when legislature is in session. Great Falls, Missoula and Bozeman are consistently difficult to reach.

Office uses Eastern Montana College conferencing capabilities. This features unlimited conferences, good sound quality, and distribution of payments.

Communications Division is currently examining the telephone systems of WMC, MT Tech, and NMC.

TABLE 31 SURVEY RESULTS:

DEPARTMENT OR ORGANIZATION MONTANA STATE UNIVERSITY1979-80 Telephone Expenditures \$165,809.17Number of Questionnaires Mailed 45Number of Questionnaires Returned _____ (Helena agencies)
14 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	5	3	6	Average number times per day you use State of Montana telephones
2.	8	5		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	11			System out of order
b		8	6	System busy
c	10	1		System interference
d	7	1		Poor turnaround times for labor orders
e	6			Incorrect billings
f	6			Inaccurate or misleading information from vendors
g	2	4		Escalating costs
h	5	1		Inadequate possibilities for expanding system
	Yes	No		
4a	7	5		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	11	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	11	2		Has your telephone system grown in last 5 years?
6.	2	9		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1	4	5	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a				Area code restriction
b	2			Attendant busy lamp field
c	3			Attendant conference
d				Attendant direct station selection
e	1			Attendant intercept
f				Attendant recall
g	3			Automatic dialers
h				Automatic identification of outward dialing
i	6			Automatic route selection
j	4			Call forwarding
k	4			Call hold
l	3			Call waiting indication
m				Customer administration center
n	2			Data privacy
o	3			Direct-in-dialing
p	4			Hunting
q	6			Individual call transfer
r	4			Intercom
s	1			Power failure capability
t	4			Pushbutton dialing
u	1			Traffic measurement
v	2			WATS timing
w	2			Queueing
x	2			Intercept
y	3			Out-of-hours arrangements
z	4			Speaker phones
aa	1			Message centers
bb	3			Add-on-conference
cc	3			Speed dialing
dd				System test facilities
ee	2			Camp-on
ff	1			Line lockout/tone denial
gg	1			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii	1			System feature cancellation
jj	1			Training program
kk	1			Installation program
ll	1			Interconnection plans
	aaa			Attendant centralized service
	bbb			Attendant console
	ccc			Interface for long-distance calling
	ddd			Call park
	eee			Call pickup
	fff			Call transfer
	ggg			Emergency access to attendant
	hhh			Executive override
	iii			Line lockout with warning
	jjj			Loudspeaker
	kkk			Miscellaneous trunk restrictions
	lll			Radio paging
	mmm			Recorded telephone dictation access
	nnn			Timed recall on outgoing calls
	ooo			Station restriction features
	ppp			Data communication access
	qqq			Data restriction
	rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	4

Mail Survey Comments

Replace in-house separate intercom system which is a nuisance and does not work well.

There is only one system for the college and 3 large departments.

WATS line frequently busy.

We need an automated billing system, where calls made can be billed to different in-house accounts by dialing a 3-digit prefix number. This then could be printed out on the monthly WATS charge statement, by account number.

The only thing that we would find helpful is a WATS line that is less often busy.

System (Centrex) OK, but WATS is always busy.

When WATS is heavily used, the circuits malfunction excessively--circuits drop out, call goes through but refuses to ring or complete.

DEPARTMENT OR ORGANIZATION UNIVERSITY OF MONTANA1979-80 Telephone Expenditures \$106,434.39Number of Questionnaires Mailed 35Number of Questionnaires Returned _____ (Helena agencies)
22 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	6	8	9	Average number times per day you use State of Montana telephones
2.	13	7	3	Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	20	1		System out of order
b	9	9	5	System busy
c	18	4		System interference
d	18	1	1	Poor turnaround times for labor orders
e	16	3	1	Incorrect billings
f	17	3		Inaccurate or misleading information from vendors
g	5	6	8	Escalating costs
h	16		1	Inadequate possibilities for expanding system
	Yes	No		
4a	16	6		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	21	1		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	7	13		Has your telephone system grown in last 5 years?
6.	10	12		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	6	7	8	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey	Necessary	Very Desirable	
8a	3			Area code restriction
b	7			Attendant busy lamp field
c	6			Attendant conference
d	7			Attendant direct station selection
e	5			Attendant intercept
f	3			Attendant recall
g	7			Automatic dialers
h	5			Automatic identification of outward dialing
i	8			Automatic route selection
j	7			Call forwarding
k	9			Call hold
l	9			Call waiting indication
m	4			Customer administration center
n	4			Data privacy
o	6			Direct-in-dialing
p	10			Hunting
q	11			Individual call transfer
r	8			Intercom
s	5			Power failure capability
t	13			Pushbutton dialing
u	5			Traffic measurement
v	7			WATS timing
w	7			Queueing
x	4			Intercept
y	7			Out-of-hours arrangements
z	9			Speaker phones
aa	2			Message centers
bb	9			Add-on-conference
cc	10			Speed dialing
dd	2			System test facilities
ee	4			Camp-on
ff				Line lockout/tone denial
gg	5			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	4			Immediate system response
ii	5			System feature cancellation
jj	3			Training program
kk	4			Installation program
ll	2			Interconnection plans
aaa				Attendant centralized service
bbb				Attendant console
ccc				Interface for long-distance calling
ddd				Call park
eee				Call pickup
fff				Call transfer
ggg				Emergency access to attendant
hhh				Executive override
iii				Line lockout with warning
jjj	1			Loudspeaker
kkk				Miscellaneous trunk restrictions
lll				Radio paging
mmm				Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp				Data communication access
qqq				Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
2	1

Mail Survey Comments

Our main expansion in this office has been a definite increase in the number of long-distance calls made per month--an increase of approximately 150% to 200%. Our main problems are the long amounts of time needed to dial a call (lack of pushbuttons and speed dialing and a frequently busy system).

System is adequate.

System old-fashioned and doesn't do all the things a system our size should be able to do.

We have requested an evaluation of our system. A totally new system would cost too much and we can't afford it--but it probably would be a better system than we have. It's unfortunate that this is not a competitive field.

Inability to answer centrally for faculty and to tell who is using the line.

If pushbutton is no more expensive, it would be a great convenience.

Too many busy signals.

We need a centralized department system; more WATS lines.

Costs are too high for what we are getting. Installation costs are much too high.

Outgrown present systems. Too many people using insufficient number of lines. More WATS lines to campus .

This is Nippan equipment and does not interface well with Mountain Bell. We also need a way of tracing calls.

We have a big problem getting the downtown operator the first three weeks of each quarter. More circuits would help this. Your feature "M" would be great, and save the University a great deal in Mountain Bell charges, which is escalating beyond reality.

Expanding needs, development of new programs, and a responsibility for outreach activities.

Some kind of answering service (taped).

Needs more funding; the availability of individual telephones has decreased.

Additional hot line service needed, but too expensive at U of M.

Touch-tone dialing would be a great improvement.

Try the new Horizon system; it seems to have all the capabilities required.

Can't afford any of your options (Question 8).

DEPARTMENT OR ORGANIZATION EASTERN MONTANA COLLEGE1979-80 Telephone Expenditures \$28,546.52Number of Questionnaires Mailed 25Number of Questionnaires Returned _____ (Helena agencies)
17 (Out-of-town agencies)

Figures represent tallies obtained from mailed survey

	0-2	3-10	11+	
1.	6	4	7	Average number times per day you use State of Montana telephones
2.	10	5	2	Average number out-of-town calls you make per day
	1	2	3	
3a	15			Problems encountered when using state telephone system
b	4	9	4	System out of order
c	10	3	2	System busy
d	14			System interference
e	14	1		Poor turnaround times for labor orders
f	11	1		Incorrect billings
g	8	4	3	Inaccurate or misleading information from vendors
h	8	3	1	Escalating costs
	Yes	No		
4a	12	5		Inadequate possibilities for expanding system
b	15	1		Does your organization's telephone system:
				Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
5.	9	5		Permit an acceptable percentage of in-house calls to through (without a busy signal)?
6.	8	9		Has your telephone system grown in last 5 years?
				Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	5	8	4	How long do you feel you can continue functioning efficiently with the system you currently possess?

Mail Survey		Necessary	Very Desirable	
8a	1			Area code restriction
b	2			Attendant busy lamp field
c	2			Attendant conference
d	4			Attendant direct station selection
e	3			Attendant intercept
f	5			Attendant recall
g	5			Automatic dialers
h	1			Automatic identification of outward dialing
i	9			Automatic route selection
j	8			Call forwarding
k	8			Call hold
l	6			Call waiting indication
m	4			Customer administration center
n	3			Data privacy
o	5			Direct-in-dialing
p	9			Hunting
q	8			Individual call transfer
r	6			Intercom
s	5			Power failure capability
t	10			Pushbutton dialing
u	2			Traffic measurement
v	3			WATS timing
w	5			Queueing
x	4			Intercept
y	7			Out-of-hours arrangements
z	6			Speaker phones
aa	1			Message centers
bb	8			Add-on-conference
cc	4			Speed dialing
dd	2			System test facilities
ee	2			Camp-on
ff				Line lockout/tone denial
gg	3			Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	3			Immediate system response
ii	2			System feature cancellation
jj	3			Training program
kk	2			Installation program
ll	2			Interconnection plans
	aaa			Attendant centralized service
	bbb			Attendant console
	ccc			Interface for long-distance calling
	ddd			Call park
	eee			Call pickup
	fff			Call transfer
	ggg			Emergency access to attendant
	hhh			Executive override
	iii			Line lockout with warning
	jjj			Loudspeaker
	kkk			Miscellaneous trunk restrictions
	lll			Radio paging
	mmm			Recorded telephone dictation access
	nnn			Timed recall on outgoing calls
	ooo			Station restriction features
	ppp			Data communication access
	qqq			Data restriction
	rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
5	2

Mail Survey Comments

We would like to see our current Centrex system (unit) updated. We probably would benefit by a campus-wide review of usage and needs in each department and division.

We need more incoming and outgoing lines.

Need new features and new technologies.

Seems to be quite a bit of pressure on current lines--i.e., system busy often.

1979-80 Telephone Expenditures \$4,740.89

Number of Questionnaires Returned 2 (Helena agencies)
(Out-of-town agencies)

	0-2	3-10	11+	
1.				Average number times per day you use State of Montana telephones
2.	1	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b		2		System busy
c	3			System interference
d	1			Poor turnaround times for labor orders
e	1			Incorrect billings
f	1			Inaccurate or misleading information from vendors
g	1			Escalating costs
h	1			Inadequate possibilities for expanding system
	Yes	No		
4a	2			Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	2			Permit an acceptable percentage of in-house calls to through (without a busy signal)?
5.	1			Has your telephone system grown in last 5 years?
6.	1	1		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.	1		1	How long do you feel you can continue functioning efficiently with the system you currently possess?

8a	Mail Survey		Necessary	Very Desirable	
b	1				Area code restriction
c	1				Attendant busy lamp field
d	1				Attendant conference
e	1				Attendant direct station selection
f	2				Attendant intercept
g	1				Attendant recall
h	1				Automatic dialers
i	1				Automatic identification of outward dialing
j	2				Automatic route selection
k	1				Call forwarding
l	2				Call hold
m	1				Call waiting indication
n	1				Customer administration center
o	1				Data privacy
p	1				Direct-in-dialing
q	2				Hunting
r	1				Individual call transfer
s	1				Intercom
t	2				Power failure capability
u					Pushbutton dialing
v	1				Traffic measurement
w	2				WATS timing
x					Queueing
y	2				Intercept
z	1				Out-of-hours arrangements
aa					Speaker phones
bb	1				Message centers
cc	1				Add-on-conference
dd					Speed dialing
ee	1				System test facilities
ff	1				Camp-on
gg	2				Line lockout/terminal
					Distinctive ringing

Mail Survey		Necessary	Very Desirable	
hh	1			Immediate system response
ii				System feature cancellation
jj	1			Training program
kk				Installation program
ll				Interconnection plans
aaa				Attendant centralized service
bbb				Attendant console
ccc				Interface for long-distance calling
ddd				Call park
eee				Call pickup
fff				Call transfer
ggg				Emergency access to attendant
hhh				Executive override
iii				Line lockout with warning
jjj				Loudspeaker
kkk				Miscellaneous trunk restrictions
lll				Radio paging
mmm				Recorded telephone dictation access
nnn				Timed recall on outgoing calls
ooo				Station restriction features
ppp				Data communication access
qqq				Data restriction
rrr				Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
1	1

Mail Survey Comment

Time is wasted, especially when using WATS line. There is an inability to transfer incoming calls between offices.

Number of Questionnaires Mailed 10

Number of Questionnaires Returned 4 (Helena agencies)

(Out-of-town agencies)

	0-2	3-10	11+	
1.	1	1	2	Average number times per day you use State of Montana telephones
2.	3	1		Average number out-of-town calls you make per day
	1	2	3	Problems encountered when using state telephone system
3a	2			System out of order
b	3		1	System busy
c	2	1		System interference
d	2			Poor turnaround times for labor orders
e	2			Incorrect billings
f	2			Inaccurate or misleading information from vendors
g	2			Escalating costs
h	2			Inadequate possibilities for expanding system
	Yes	No		
4a	2	1		Does your organization's telephone system: Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
b	3			Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
5.	4			Has your telephone system grown in last 5 years?
6.		4		Do you feel that your organization needs a new, or upgraded, telephone system?
	1 yr	2-3 yrs	4-5 yrs	
7.			4	How long do you feel you can continue functioning efficiently with the system you currently possess?

	Mail Survey		Necessary	Very Desirable	
8a					Area code restriction
b	1				Attendant busy lamp field
c					Attendant conference
d					Attendant direct station selection
e					Attendant intercept
f					Attendant recall
g	1				Automatic dialers
h					Automatic identification of outward dialing
i					Automatic route selection
j					Call forwarding
k					Call hold
l					Call waiting indication
m					Customer administration center
n					Data privacy
o					Direct-in-dialing
p					Hunting
q					Individual call transfer
r	1				Intercom
s	1				Power failure capability
t					Pushbutton dialing
u					Traffic measurement
v					WATS timing
w					Queueing
x					Intercept
y	1				Out-of-hours arrangements
z	1				Speaker phones
aa	1				Message centers
bb					Add-on-conference
cc	2				Speed dialing
dd					System test facilities
ee					Camp-on
ff					Line lockout/tone denial
gg					Distinctive ringing

	Mail Survey		
	Necessary	Very Desirable	
hh			Immediate system response
ii			System feature cancellation
jj			Training program
kk			Installation program
ll			Interconnection plans

aaa			Attendant centralized service
bbb			Attendant console
ccc			Interface for long-distance calling
ddd			Call park
eee			Call pickup
fff			Call transfer
ggg			Emergency access to attendant
hhh			Executive override
iii			Line lockout with warning
jjj			Loudspeaker
kkk			Miscellaneous trunk restrictions
lll			Radio paging
mmm			Recorded telephone dictation access
nnn			Timed recall on outgoing calls
ooo			Station restriction features
ppp			Data communication access
qqq			Data restriction
rrr			Private line terminal

Response by high-frequency telephone users to Question 6: Do you feel that your organization needs a new or upgraded telephone system?

Yes	No
	2

DISCUSSION

A high percentage of employees returning the questionnaires use the telephone frequently and on a daily basis. This indicates a basic familiarity with the existing telephone system, and would lend validity to their answers. A major concern, however, which is stated frequently on the returned questionnaires, is a lack of knowledge about the specific telephone features listed in Question #8. A more useful selection of a system by individual agencies could be obtained if employees were fully aware of the capabilities and limitations of each feature. A second major concern stated is an uncertainty of the feature's cost-effectiveness. Many respondents qualified their choices of features on a cost-benefit basis, while others selected nearly every feature available. A wide discrepancy in awareness of budgetary considerations could be inferred from this. Interviewed administrators were unanimously concerned about escalating costs. State of Montana and individual agency telephone costs are presented in Tables 36 and 37.

The number of employees returning the questionnaire (212) gives a high reliability to the survey results. It must be noted, however, that wide discrepancies exist within the MSTs. Regions, divisions, and even physical buildings vary widely. Telephony needs and uses are different for individual agencies, and the existing system must be defined with this knowledge at the forefront.

"System busy" is the largest single problem encountered. Interview results indicate some awareness of studies done to determine the percentage of time (TO PAGE 243)

TABLE 36. STATE OF MONTANA TELEPHONE COST COMPARISON FY 1975-80

Fiscal Year	Local Service and Equipment	Long Distance	Installation	Network	Total
1975	\$359,657	\$145,837	\$20,904	\$382,947	\$ 909,345
1976	405,649	139,982	24,760	401,690	972,081
1977	477,701	178,439	31,320	517,142	1,204,602
1978*	497,917	122,328	27,683	793,874	1,441,802
1979**	673,895	126,719	43,520	751,501	1,595,635
1980	738,100	154,296	73,121	870,427	1,835,944

* Nationwide WATS was non-existent prior to Fiscal Year 1978.

** October 1978 - Billing structure was revised to accommodate computer generated bills. Thereafter, data circuits were billed directly to the agencies. This amounted to approximately \$15,000 per month.

All figures obtained from Department of Administration, Communications Division

TABLE 37. AGENCY TELEPHONE COSTS FY 1980

Agency	FY 1980 Telephone Costs	FY 1980 Expenditures/Appropriations	Percentage of Budget for Telephony
LEGISLATIVE BRANCH	\$ 29,145.92		
Legislative Auditor	10,526.55	1,378,859	.75
Fiscal Analyst	5,201.52	382,551	1.36
Legislative Council	13,417.85	1,911,347	.70
Legislative Assembly-Senate	786.53		
Legislative Assembly-House	1,029.30		
Environmental Quality Council	2,886.68	134,412	2.14
Consumer Council	3,253.81	441,560	.74
Supreme Court	12,902.13	2,340,537	.55
GOVERNOR'S OFFICE	56,004.42		
Governor	26,374.87		
Governor's Office of Commerce	6,884.88	2,356,200	2.38
Governor's Office - Budget Div.	11,084.48		
Powder River	2,625.18		
Lieutenant Governor	6,217.71		
Governor's Office - Citizens Adv.	1,992.70		
Board of Visitors	824.60		
Secretary of State	6,891.12	559,606	1.23
Campaign Finances	2,212.90	83,661	2.64
Auditor's Office	19,408.02	1,433,869	1.35
Supt. of Public Instruction	95,002.92	4,305,218	2.21
Crime Control	15,271.27	3,864,686	
JUSTICE		12,260,430	.26
Attorney General	79,907.98		
Highway Patrol	15,936.64		
Registrar of Motor Vehicles	22,848.67		
Criminal Investigator	7,314.25		
Justice Department	2,412.99		
	*31,395.43	12,260,430	

(continued)

TABLE 37 (continued)

Agency	FY 1980 Telephone Costs	FY 1980 Expenditures/Appropriations	Percentage of Budget for Telephony
Public Service Regulation	19,158.87	1,109,315	1.73
Board of Public Education	3,044.93	192,904	1.58
Higher Education	16,297.53	576,287	2.83
University of Montana	106,434.39	20,816,217	.51
MONTANA STATE UNIVERSITY	177,987.13	22,895.532	.78
Montana State University	165,809.17		
MSU-School of Nursing	4,341.72		
MSU-Civil Engineering	7,476.24		
MSU-Miles City Exp. Station	360.00		
Montana College of Min. Sci. Tech	10,353.70	3,046,594	.35
Eastern Montana College	28,546.52	7,273.640	.39
Northern Montana College	9,174.76	3,233,016	.28
Western Montana College	4,740.89	2,016.944	.24
School for Deaf and Blind	2,796.11	1,613,402	.17
Montana Arts Council	3,049.56	297,305	1.03
Library Commission	6,190.24	916,284	.68
Vocational Education Council	1,500.04		
Historical Society	12,172.82	1,001,556	1.22
Fish, Wildlife and Parks	88,894.83	13,306,752	.67
Health	133,765.28	17,688,829	.76
Highway	211,289.28	202,082,856	1.05
State Lands	22,358.69	7,172,760	.31
Livestock	42,576.22	2,951,237	1.44
DEPT. NATURAL RES. & CONS.	86,221.42	16,990,797	.42
Natural Resources	72,069.35		
Oil and Gas	4,483.33		
Forestry	9,668.74		

(continued)

TABLE 37 (continued)

Agency	FY 1980 Telephone Costs	FY 1980 Expenditures/Appropriations	Percentage of Budget for Telephony
Revenue	103,506.57	21,889,076	.47
ADMINISTRATION	72,072.36	18,268,048	.39
Director's Office	3,628.22		
Accounting	5,057.88		
A & E	3,485.97		
Publications and Graphics	1,937.25		
Information Systems	4,834.23		
Data Processing	45,414.54		
General Services	7,715.27		
Purchasing	5,937.81		
Building Codes	6,167.89		
Treasurer's	3,415.46		
Board of Housing	7,987.21		
Board of Investments	4,832.22		
Communications	7,534.23		
Personnel Division	17,106.45		
Insurance and Legal	2,491.44		
Records Management	1,375.40		
Workers Comp. Judge	2,627.86		
PERS	7,680.14		
Teachers' Retirement	2,193.61		
State Tax Appeals Board	2,503.57		
Agriculture	26,550.23	2,675,827	.99
Business Regulation	9,840.23	1,209,940	.81
INSTITUTIONS	97,279.56	49,546,410	.20
Institutions	85,549.03		
Aftercare	7,412.33		
Mental Health	1,848.00		
Adult Probation and Parole	2,470.20		
Boulder River School	9,138.22	7,724,152	.19
(continued)			

TABLE 37 (continued)

Agency	FY 1980 Telephone Costs	FY 1980 Expenditures/Appropriations	Percentage of Budget for Telephony
Center for the Aged	4,439.06	1,479,781	.30
Galen State Hospital	4,399.66	4,594,997	.09
Mountain View School	2,809.54	1,142,731	.25
Pine Hills School	3,602.88	2,096,952	.17
Montana State Prison	2,400.00	6,883,217	.03
Warm Springs State Hospital	9,857.82	9,651,161	.10
Montana Drug Program	3,092.34		
Dept. of Community Affairs	92,494.43	10,239,908	.90
LABOR AND INDUSTRY	42,349.47		
Labor Standards	35,385.13	2,319,677	1.83
Human Rights	6,964.34		
Employment Security Division	100,280.83	12,223,654	.82
Workers Compensation	51,214.31	4,522,228	1.13
Military Affairs	59,881.75	963,619	6.21
Disaster and Emergency	8,918.14	365,340	2.44
Professional & Occup. Licensing	16,697.25	1,142,796	1.46
SRS	190,929.24	56,657,710	.37
D.D. Advisory Council	1,805.31		
Veterans Affairs Division	1,124.22		
Administration	143,927.64	18,268,048	.79
Labor and Industry	193,844.61	2,319,677	
5 University		65,190,684	1.02

All FY 1980 telephone costs obtained from Dept. of Administration, Communications Division
 All FY 1980 total expenditures/appropriations or General Fund appropriation figures obtained from
Appropriations Report 1981 Biennium

telephone lines are busy, but again, budgetary considerations are paramount to the decision to add extra lines. Frequent requests were made in the interviews that a method of evaluating existing systems and alternative systems be made available to management personnel. This should be pursued.

While a total of 64 percent of the respondents indicate "System busy" as an often or very frequently encountered problem, 66 percent respond that the percentage of WATS calls that get through is acceptable; an even larger percentage (86%) are positive about in-house calls. Perhaps employees view busy telephone lines as an acceptable problem? This hypothesis is reinforced by the 66 percent who respond that a new or upgraded system is not needed immediately (80 percent of the respondents feel they can continue functioning efficiently for 2-5 years with their current systems). The single most selected item, however, is "Hunting," a feature which allows the switch to hunt from a busy circuit to a clear circuit in completion of a call. Automatic route selection follows closely in popularity, a feature which finds the cheapest long-distance route. Here again, a busy system and financial awareness are shown.

The existing telephone management and billing method is cited as a problem by many of the interviewed administrators. The long-distance calls record permits widespread abuse of the system. Personal calls can account for a great deal of "system busy" time. A need to remediate these problems is frequently expressed.

RECOMMENDATIONS

The next phase of the telephony needs assessment involves developing a concrete management level means of evaluating individual telephony systems. The Telecommunications Project or the Communications Division can coordinate and evaluate these individual assessments to ensure efficiency. Management should place the emphasis on choosing alternatives which offer the best combination of acceptability, system effectiveness, and feasible cost of ownership.

The management level planning and evaluation process can be organized following these interrelated steps or phases:

- GOALS: Establish goals and objectives.
- REQUIREMENT: Examine local, state and national telecommunications ordinances.
- Establish which of the standards must be met.
- Compare goals with local, state and national telecommunications plans.
- Identify possibilities for interagency cooperation.
- TASKS: Identify available resources.
- Conduct a literature search.
- Familiarize participants with existing system, including equipment capabilities and costs.
- Document current system parameters.
- Establish physical capabilities of buildings for new components or systems.
- Examine similar systems.
- Examine newer systems.

Distribute goals and objectives for review and comment.

Consult system users.

Design a means of collecting necessary data.

Collect and analyze data.

Review goals.

Establish implementation priorities.

COSTS: Perform: investment cost analysis
 operating cost analysis
 cost-savings analysis
 cost-benefit analysis

EVALUATION: Evaluate results in terms of goals.

Establish a regular assessment of system priorities and goals.

Implement system according to goal priorities.

The potential for abuse of the MSTs is great. Management and billing techniques frequently do not encourage responsible use of the telephones. One solution to the problem might be to monitor employees closely, holding each person accountable for every phone call. Another, less costly and time-consuming method might be a comprehensive training seminar, in which employees are given full knowledge of telephone costs, and instructions on how best to use the system, stressing costs, time of day, length of call, efficiency of information transfer, and functional capabilities of the system. This alternative might be very effective, both for limiting abuses and for employee efficiency. The use of telecommunications in place of traveling increases yearly, and telephone skills become more important every day.

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1. Who manages your telephone system?
2. What types of problems have you encountered in managing your telephone system?

<u>Problem</u>	<u>Infrequent</u>	<u>Often</u>	<u>Very Frequent</u>
a. Poor turnaround times for labor orders			
b. Incorrect billings			
c. Inaccurate or misleading information from vendors			
d. Escalating costs			
e. System down-time			
f. System busied out			
g. Inadequate expansion capability			
h. System interference			
i. "Facilities" inadequacy			
j. Other (specify) _____			
k. Other (specify) _____			

3. Has the trend in your management problems become more serious with the passage of time?
4. How has your system grown in the past five years?
5. How long do you feel you can continue functioning with the system you currently possess?
6. Does your organization's telephone system:
 - a. Permit an acceptable percentage of WATS calls to go out (without a busy signal)?
 - b. Permit an acceptable percentage of in-house calls to go through (without a busy signal)?
7. What would you like your telephone system to be able to do?
(See list on following pages) Please consider these features in terms of

Necessary for
Efficiency in
the Department

Terrific Feature
Which Would Make
Life More Pleasant

Unnecessary
or
Unwanted

- a. Area Code Restriction (prevents calls from being directed outside a specified area code)
- b. Attendant Centralized Service (allows all calls to be handled at one central location)
- c. Attendant Conference (Simultaneous connection for up to six parties plus attendant)
- d. Attendant Console (Desk-top position from which attendant handles calls. Provides display which assists in identifying incoming and outgoing calls)
- e. Attendant Direct Station Selection (refers to manner in which operator completes calls)
- f. Attendant Intercept
- g. Attendant Recall
- h. Automatic Dialers
- h(a) Automatic Identification of Outward Dialing (automatic record of toll calls by its)
- i. Automatic Route Selection (selects least expensive trunk for outgoing calls)
- j. Automatic Station Restriction (prevents unauthorized phone calls from vacant rooms)
- k. Call Forwarding (Redirects incoming calls to any other customer-selected station in the system, or redirects incoming calls when station is busy and/or unattended)
- l. Call Hold
- m. Call Park (allows a station user to place a call on hold and regain access to it at another station)
- n. Call Pickup (allows a station user to answer other ringing stations within a pickup group)
- o. Call Transfer (capability of a station to send an incoming call to another station, after first conversing with caller)
- p. Call Waiting (attendant alerts busy party to waiting call)
- q. Customer Administration Center (permits customer to administer station and system features remotely and locally (such as number changes)
- r. Data Communication Access (provides direct-dial access to computer equipment)
- s. Data Privacy (prevents interference on data transmissions--user controlled)
- t. Data Restriction (restricts station for data transmission--software controlled)
- u. Direct Department Calling (handles incoming calls for selected departments without attendant involvement)

- v. Distinctive Ringing (unique patterns allow station users to distinguish various types of calls)
- w. Echo Suppressor (minimized "echo" in system transmission. Used primarily when transmitting data)
- x. Emergency Access to Attendant (priority handling of emergency calls)
- y. Energy Communication Service (permits customer to manage energy use via shedding, cycling, and time-of-day functions)
- z. Executive Override (following a warning tone, a selective user may access an existing two-way conversation)
- aa. Foreign Exchange Access (access to foreign exchange trunks)
- bb. Immediate System Response (quick system reaction to command)
- cc. Individual Call Transfer (capability of a station to send an incoming call to another station, after first conversing with caller)
- dd. Installation Program (clarifies vendor's installation program)
- ee. Intercept Treatment (routes calls which cannot be completed to attendant, tone, or recorded message)
- ff. Intercom System (installed on telephone unit)
- gg. Interconnection Plans (clarifies vendor's plan and responsibility to connect switch to bell network)
- hh. Interface for Long Distance Billing (stores, displays, and prints billing information)
- ii. Line Lockout with Warning (tone warns when station is off hook and holds line out of service)
- jj. Loudspeaker Paging (gives attendant direct (and station user dial) access to paging equipment)
- kk. Message Centers (system capability to call forward multiple circuits to one station)
- ll. Miscellaneous Trunk Restrictions (prohibits dialing to pre-selected trunk groups)
- mm. Power Failure Capability (provides limited service to the exchange system during commercial power failure)
- nn. Privacy and Lockout (denies attendant re-entry on a completed call unless recalled by station user)
- oo. Private Line Termination (optional access to and termination from private networks)

- pp. Protection and Alarms (refers to an alarm configuration for the switch)
- qq. Pushbutton Dialing (self-explanatory)
- rr. Radio Paging Access (allows dial access to customer-provided radio paging equipment)
- ss. Recorded Telephone Dictation Access (to customer's centralized dictation equipment)
- tt. Remote Maintenance, Administration and Traffic System (permits off-site data polling of the PBX by the telephone company)
- uu. Speaker Phones (self-explanatory)
- vv. Speed Dialing (capability for a single digit to represent multiple digits for quicker dialing)
- ww. Station Hunting (allows switch to hunt from a busy circuit to a clear circuit in completion of a call)
- xx. Station Message Detail Recording (records system communication activity)
- yy. Station Restriction Features (control and limit of call usage: fully restricted; inward restriction; origination restriction; outward restriction; termination restriction)
- zz. Station-to-Station Calling (direct dial within system without attendant)
- aaa. System Feature Cancellation (allows for system-wide cancellation of a particular feature)
- bbb. Three-Way Conference Transfer (brings third party into two-way conversation)
- ccc. Timed Recall on Outgoing Calls (outgoing trunk calls are automatically routed to attendant after specified interval)
- ddd. Toll Restriction (restricts direct-dial toll calls)
- eee. Training program (clarifies vendor's training program)
- fff. Traffic Recording Devices (records switching system traffic)
- ggg. Trunk Queueing (automatically notifies users when a previously busy trunk line is available)
- hhh. Trunk Verification by Attendant (attendant can determine working condition of trunk lines)
- iii. Visually Impaired Attendant Service (tactile devices or audible signals on attendant position to allow visually impaired individual to operate an attendant console)
- jjj. WATS (Wide Area Telecommunications Service) Access to or from WATS serving off
- kkk. WATS Timing Device (self-explanatory)

DEPARTMENT OF ADMINISTRATION
TELECOMMUNICATIONS PROJECT

251



TED SCHWINDEN, GOVERNOR

ROOM 227, SAM W. MITCHELL BUILDING

STATE OF MONTANA

(406) 449-4564

HELENA, MONTANA 59620

To: Selected State of Montana Employees
From: Beverly R. Magley
Survey and Research Analyst
Re: State of Montana Telephone System
Date: May 21, 1981

The Montana Telecommunications Project is currently researching the state's telephone system. In order to gain a thorough understanding of the overall system, we need information on telephone usage from employees throughout Montana.

We have selected persons representing every state department, employed in a wide variety of jobs. You are one of the 500 employees chosen to fill out the enclosed survey questionnaire.

Some employees who receive this may rarely use the telephone in their job capacity; others may use telephones with great frequency. We are interested in the information you return to us regardless of how often you use the state telephone system.

Please fill out the questionnaire immediately, and return it to us in tomorrow's mail. Enclosed is a stamped envelope for your convenience.

Your participation will give us valuable information for our project.

Thank you.

Beverly R. Magley



STATE OF MONTANA TELEPHONE SYSTEM
EMPLOYEE QUESTIONNAIRE

May 21, 1981

Department of _____

Division or Agency _____

Your Job Title _____

1. Please circle the average number of times per day that you use the State of Montana telephones.

0-2 3-10 11+

2. What is the average number of out-of-town calls you make per day?

0-2 3-10 11+

3. What types of problems have you encountered when using the state telephone system?

	<u>Infrequent</u>	<u>Often</u>	<u>Very Frequent</u>
a. System out of order	1	2	3
b. System busy	1	2	3
c. System interference	1	2	3
d. Poor turnaround times for labor orders	1	2	3
e. Incorrect billings	1	2	3
f. Inaccurate or misleading information from vendors	1	2	3
g. Escalating costs	1	2	3
h. Inadequate possibilities for expanding system	1	2	3
j. Other (specify)	1	2	3

4. Does your organization's telephone system:

- a. Permit an acceptable percentage of WATS calls to go out (without a busy signal)?

☐

Yes

No

☐

- b. Permit an acceptable percentage of in-house calls to go through (without a busy signal)?

☐

Yes

No

☐

5. Has your telephone system grown in the last five (5) years?

☐

Yes

No

☐

Briefly describe the growth

6. Do you feel that your organization needs a new, or upgraded, telephone system?

☐

Yes

No

☐

If yes, why?

7. How long do you feel you can continue functioning efficiently with the system you currently possess?

1 year

2-3 years

4-5 years

8. What would you like your telephone system to be able to do? (Check as many as would enable you to perform your job most efficiently.)☐

- a. Area code restriction

☐

- b. Attendant busy lamp field

(continued on next page)

- ☐ c. Attendant conference
- ☐ d. Attendant direct station selection
- ☐ e. Attendant intercept
- ☐ f. Attendant recall
- ☐ g. Automatic dialers
- ☐ h. Automatic identification of outward dialing
- ☐ i. Automatic route selection (finds cheapest long distance route)
- ☐ j. Call forwarding (capability of a station to have its own incoming calls sent to another station, without conversing with caller)
- ☐ k. Call hold
- ☐ l. Call waiting indication
- ☐ m. Customer administration center (allows customer to number change phones and alter feature access to phones)
- ☐ n. Data privacy
- ☐ o. Direct-in-dialing (refers to a system designed so that calls coming in from the outside world do not have to pass through an operator's position, but instead terminate in the called station)
- ☐ p. Hunting (allows switch to hunt from a busy circuit to a clear circuit in completion of a call)
- ☐ q. Individual call transfer (capability of a station to send an incoming call to another station, after first conversing with caller)
- ☐ r. Intercom
- ☐ s. Power failure capability (refers to switch's strategy of coping with a power failure)
- ☐ t. Pushbutton dialing
- ☐ u. Traffic measurement
- ☐ v. WATS timing
- ☐ w. Queueing (refers to switch's capability to notify users of clear trunks)
- ☐ x. Intercept (system throws calls to dead or unassigned circuits to operator's position)

(continued on next page)

- ☐ y. Out-of-hours arrangements (throws calls after hours to central position)
- ☐ z. Speaker phones
- ☐ aa. Message centers (refers to system capability to call forward multiple circuits to one station)
- ☐ bb. Add-on-conference (capability of a station to add a third party to a conversation, without attendant assistance)
- ☐ cc. Speed dialing (capability for a single digit to represent multiple digits for quicker dialing)
- ☐ dd. System test facilities (refers to switch's capability to be tested for functionality by local administrators)
- ☐ ee. Camp-on (introduces signal to circuit to announce waiting call)
- ☐ ff. Line lockout/tone denial (prevents above, data use)
- ☐ gg. Distinctive ringing (discriminates as to differing call originations)
- ☐ hh. Immediate system response (quick system reaction to command)
- ☐ ii. System feature cancellation (allows for system-wide cancellation of a particular feature)
- ☐ jj. Training program (clarifies vendor's training program)
- ☐ kk. Installation program (clarifies vendor's installation program)
- ☐ ll. Interconnection plans (clarifies vendor's plan and responsibility to connect switch to bell network)

9. Are there any additional comments you would like to make? We welcome your suggestions and comments.

TELEPHONY TASK FORCE
FACILITIES PROJECTION

	Year 1	Year 2	Year 3	Year 4	Year 5
. MAIN LINES	<u>3%</u>	<u>4%</u>	<u>4.3%</u>	<u>4.3%</u>	<u>4.3%</u>
. EXTENSION STATIONS	<u>3.3%</u>	<u>4%</u>	<u>5.3%</u>	<u>5.3%</u>	<u>5.3%</u>
. TRUNKS, TWO WAY	<u>4%</u>	<u>4%</u>	<u>4%</u>	<u>4%</u>	<u>4%</u>
. TRUNKS, ONE WAY OUT	<u>4%</u>	<u>3.5%</u>	<u>3%</u>	<u>3.5%</u>	<u>3.5%</u>
. TRUNKS, ONE WAY IN	<u>2.5%</u>	<u>3.3%</u>	<u>2.7%</u>	<u>3%</u>	<u>3%</u>
. COMPUTER PORTS, DIAL-UP	<u>5%</u>	<u>6%</u>	<u>7%</u>	<u>7%</u>	<u>7%</u>
. OFF-PREMISE EXTENSIONS	<u>3.5%</u>	<u>5%</u>	<u>4%</u>	<u>5%</u>	<u>5%</u>
. OTHER (SPECIFY)	<u>2%</u>	<u>2%</u>	<u>3%</u>	<u>3%</u>	<u>4%</u>
. COMMENTS					

SECTION III
LAND MOBILE

SECTION III

LAND MOBILE RADIO

Land mobile radios proliferate throughout the state of Montana. The Project, as directed by its Grant, has completed a general inventory of land mobile equipment in the State, from state agency to county level, including university and college level equipment. The detail of this inventory appears as attachments 1-7, which shows the distribution of major state agency equipment by county location, lists the county equipment (where known) and university/college equipment by organizational unit and, in attachment seven, compiles this information. A summary of attachment seven shows that the state agencies, along with the colleges and universities, possess over fourteen hundred radios, with nearly one hundred transmitting sites. A cursory review of approximately forty-one percent of the county and local level equipment revealed nearly seventeen hundred radios in operation. These figures extrapolate to give an estimated four hundred radios in operation at the county level, and an estimated five thousand five hundred radios in operation statewide. County level base stations, control stations, repeaters, or relays were not included in the inventory estimates. It must be emphasized that these figures are estimates only, and were based upon the best information available to the Project at the time of this writing, insofar as it was far outside the scope of the Project's resources to ascertain the totality of the state's equipment levels precisely.

By the same token, exact levels of funding spent on land mobile systems in the state were unavailable. However, the Project, with assistance, has estimated the total annual operating costs expenditures concerning land mobile system operations to be approximately \$1,500,000 (excluding personnel costs).

Additionally, approximately \$4,000,000 is currently invested in existing capital equipment. These figures were arrived at by extrapolating costs for the State Department of Highways, which were \$233,752 for operations in 1980, which included such items as truck rental, maintenance, parts, per diem, mileage, and equipment rental, but excluding personnel costs. Further, the Department of Highways investment in existing land mobile equipment as of September, 1980, was \$633,023, including depreciation.

Insofar as the ratio of the Department of Highways mobile units (870) to the extrapolated state total mobile units (5500) is roughly 15.75%, this ratio was used to extrapolate costs state-wide.

Although, as mentioned earlier, the task of completing a physical equipment inventory for land mobile equipment was outside the scope of this Project, the Project has completed methodologies for the State to utilize in this task and in the task of completing state-wide needs assessments for land mobile users. These methodologies were designed for the Project's use by the Institute for Telecommunications Sciences (ITS) in the U.S. Department of Commerce, and were field-tested by the Project utilizing sub-contracted labor in Beaverhead County. These methodologies, the first for needs assessment, and the second for a physical inventory, are included as attachments eight and ten, respectively. Attachment nine details a revision of the original needs assessment, as submitted to the Project by the subcontractor who conducted the survey. Attachment eleven illustrates the responsible subcontractor's perceptions of the recommended changes to the physical inventory methodology.

These are obviously lengthy and complex efforts and should illustrate the difficulty of ascertaining the detailed situation regarding land mobile

radio in Montana. In addition, the length of these documents should show the need for the State to computerize this material in a volatile data base format for utilization in the future.

These methodologies revealed a number of facts concerning the land mobile situation in Montana. First, ascertaining an accurate, detailed picture of needs and equipment as completely as the county/local will be an expensive process. An extrapolation of the costs for the Beaverhead County needs assessment, which is a relatively small and straightforward land mobile operational scenario, provides an estimate of roughly \$100,000 as a funding requirement of gathering this information state-wide. In addition, to this, of course, would be the cost of the physical equipment inventory for all fifty-six counties, which, according to the subcontractor who performed this task in Beaverhead (for EMS equipment only), is an estimated \$150,000. In contrast, it may be interesting to note that the NTIA grant given to the State to fund the Telecommunications Project in its entirety was \$100,000, barely enough to study in depth only one segment of one section of telecommunications in Montana. Second, an extensive survey would consume such a large amount of time (six-twelve months) that, unless the data that it established were acted upon extremely quickly, it could easily become outdated within a matter of months. Third, the situation would not be satisfied by a one-time, "snap-shot" approach to the problem. Especially as regards physical inventory requirements. Rather, what is needed here, as expressed earlier, is the creation of a volatile data-base computerized system whereby any equipment changes could be rapidly and efficiently entered into the records, as time goes on.

The fourth fact revealed by these methodologies concerns the notion that the local level land mobile users, such as sheriffs, have an obvious need to coordinate with state-level users, such as the Department of Livestock and the Highway Patrol, yet the local level operation as organizations are not bound to cooperate with the State in any fashion whatsoever. This presents particular difficulties in the control of equipment procurement, for instance; wherein a sheriff can purchase a system on any frequency band desired, without regard as to its compatibility with any other agency. This political problem can only be solved, in the Project's opinion, at the legislative level. A fifth fact shown by the field testing of the physical inventory procedure shows that considerable technical expertise is required by the person performing this survey, as well as an understanding of common terms being required between the surveyor and the surveyee. The Project, through interaction with its Land Mobile Task Force (see attachment twelve) established a general needs assessment for land mobile systems. A sample of the assessment is provided as attachment thirteen. In summary however, this general assessment showed that the "average" agency responding to the General Needs Assessment (data base being the task force itself) showed approximately 26 FTE's at an approximate salary of \$14.8K each, associated with land mobile operations, including maintenance. The average agency's approximate annual total of personnel costs for land mobile operations, including maintenance was \$11K, however, ninety-two percent of all respondents had maintenance performed by external organizations, either other agencies (such as the Highway Department) or by commercial enterprises. The average agency's annual expenditure for land mobile equipment replacement was \$2.6K. 26% of the agencies equipment was between one and five

years old; 44% was between six and ten years, and 30% was between eleven and twenty years old. Further, the average agency felt that it should replace 81-100% of its land mobile equipment in 2.75 years.

Seventy-one percent of all respondents were on the VHF-low band frequencies, twenty-one percent were on VHF-high band, and approximately eight percent were utilizing a combination of the two frequency assignments. Overwhelmingly, (90% of respondents) the most common operational difficulty cited by the task force respondents was skip interference. Ten percent, however, cited obsolesence of equipment as a major issue.

Miscellaneous comments resulting from the General Needs Assessments included the following: "We need a uniform state-wide system", "we are presently unable to communicate with many other agencies", "we would like to go to high-band" (there were several versions of this comment), and "lack of state-wide planning has prohibited our system's expansion.

In addition to this General Needs Assessment, several issues in land mobile systems were identified as pertinent by the Project and the Land Mobile Task Force. Predominant among these issues by far is the fact that state agency systems utilizing "low-band" systems, (e.g., frequencies between 30.56 and 49.6 MHz) suffer from intermittent skip interference upon their systems. This interference, which is a naturally occurring phenomenon resulting from triangulation of radio-frequency broadcast propagation patterns involving ionospheric conditions (and, therefore, dependent to

a degree upon cyclical sun-spot levels), can become so severe as to prevent effective emergency services communications. This interference originates from, among other locations, the southern Baja Peninsula. There exists a sizable segment of the land mobile user community which believes that the answer to this difficulty lies in a simple frequency shift to "high-band" (150.8 to 162.0125 MHz). However, the Project has received conflicting information on this point: Some high-band users state that they experience little or no interference, while others note that they receive considerable interference, usually from relatively close locations, such as northern Wyoming or southern Alberta. This would seem to suggest a close correlation between frequency levels and proximity of skip interference, which deserves further investigation. This, in addition to other land mobile recommendations, is expanded further in Section IX of the final report.

Another issue of concern to land mobile users is the notion that frequency coordination among state-wide users is poor. The low-band/high-band controversy was mentioned earlier. The difficulty here is that since these radios are on different frequencies, they cannot communicate with each other. The advantages to a unified, centralized frequency plan are obvious: The largest one, of course, is that agencies and organizations could communicate directly with each other. Most people are familiar with the "Quake Lake" situation in 1959 wherein two state vehicles, within sight of each other on opposite ends of a recently-created crevasse, were unable to speak to each other since their radios were on different frequencies. This lack of frequency coordination situation still exists today. The answer to this difficulty, in the Project's opinion, involves far-reaching political changes in the state-wide communications management framework.

These changes, one of the 827 recommendations mentioned earlier, are also detailed in Section IX. An associated issue to the concept of poor frequency coordination is the fact that there presently exists few "party-line" frequencies for state-wide use. This is a separate design scenario than the notion of a coordinated state-wide frequency plan: It is a specific idea to refine the coordinated plan even further. It may, however require substantial replacement costs of radios from one-channel to two-channel models. This is, in the Project's opinion, best further explored under the resources of HB827.

Other major issues identified by the Project and the Land Mobile Task Force included the concepts of wide-spread systems obsolescence, the lack of an inventory data base, and the issues of transmission site management and site sharing. The first of these remaining issues indicated to the Project that the time was perhaps ripe for major equipment changes and, coincidentally, frequency changes in accordance to a state-wide frequency plan developed under HB827.

Insofar as a lack of an inventory data-base was concerned, the Project hoped to alleviate that situation by developing a physical inventory methodology for the State, also to utilize under HB827 (see attachment 11). As regards the last remaining issue, that of site management and site sharing, the Project felt that it's developed physical inventory methodology could also go a long way toward contributing information to assist in a solution of the problem. In addition, the Project has informally broached the idea of site sharing with the Federal government and feels that this should be pursued as well by the State in the future.

Facilities projections for land mobile equipment were extremely difficult to obtain, for a variety of reasons. Many administrators were unsure of their agency's growth patterns or were unwilling to formalize their predictions regarding equipment growth. However, the Department of Highways, with its usual excellent grasp of its communications network and its characteristics, provided the Project with detailed information concerning land mobile system growth in Montana. The detailed information is included as attachment 14. If one is willing to predict state-wide patterns from this model, in summary it is safe to say that land mobile in Montana will experience steady growth through the next five years. Through this five year period, for instance, transmitting sites should increase roughly 13%, with a 25% increase of transmitting towers located on those sites. Base stations are expected to rise on the order of 11%, while antennas and control points are expected to rise by 6% each at the end of the five year period. Emergency power equipment should rise roughly 14%, but perhaps most significantly, the amount of radios themselves will increase dramatically. Mobile units, according to Highways, will increase 28% within the next five years, while portable radios (hand-helds) will increase a notable 46%.

While it is, of course, easily arguable that utilizing one department to predict state-wide growth is inaccurate, the reality of the situation is that this agency represents nearly 16% of the total state; quite a reliable model to employ from the standpoint of statistical analysis.

The trend in land mobile is clear: This facet of telecommunications in Montana will become increasingly more and more important as systems and the

services provided by the agencies using these systems proliferate. If the state does not gain control and provide coordination of this valuable communications resource forthwith, the situation will continue as it is: A multiplicity of users, each with their own frequency segment, suffering from interference, unable to communicate with each other, and providing less than optimum service to the general public as a result of this uncontrolled and uncoordinated framework. Insofar as the general public is impacted, on an emergency need basis, more frequently in land mobile radio systems than in any other type of communications system, the Project sincerely hopes that the state utilizes the research and methodologies provided to it by the Project to solve some of the aforementioned identified problems in the near future.

ATTACHMENTS

- 0) Glossary
- 1) State Agency: Highway Department
- 2) State Agency: Highway Patrol
- 3) State Agency: Department of Forestry
- 4) State Agency: Department of Livestock
- 5) County listing, mobile units only
- 6) University/college equipment listing
- 7) Compiled general inventory data
- 8) Original needs assessment as developed by ITS
- 9) Revised Needs Assessment as developed by subcontractor
- 10) Original Physical Inventory as developed by ITS
- 11) Subcontractor's recommendations for alteration of Physical Inventory
- 12) Land Mobile Task Force list of members
- 13) Task Force Needs Assessment overview
- 14) Highway Department Facilities Projection

REPEATER: INTERMEDIATE TRANSMISSION STEP BETWEEN CONTROL AND BASE, ALWAYS A'NG FREQUENCY OF SIGNAL IN PROCESS

RELAY STATION: INTERMEDIATE TRANSMISSION LINK BETWEEN CONTROL AND REPEATER ALWAYS A'NG FREQUENCY OF SIGNAL IN PROCESS

MOBILE UNITS: TWO WAY RADIOS LOCATED IN A VEHICLE

PORTABLE UNITS: TWO WAY OR RECEIVE ONLY HUMAN CARRIED RADIOS

BASE STATION: POINT OF TRANSMISSION TOWER LOCATION

CONTROL STATION: POINT OF SIGNAL ORIGINATION: THROUGH RADIO LINK OR HARD-WIRE LINK MEANS TO BASE STATION: THROUGH TONE USE MAY FEED SEVERAL BASES

REMOTE CONTROL: POINT OF MESSAGE ORIGINATION: SEVERAL REMOTES CAN FEED ONE CONTROL STATION

SIMPLEX TRANSMISSION: CAPABILITY OF EITHER TRANSMISSION OR RECEPTION, BUT NOT BOTH SIMULTANEOUSLY

DUPLEX TRANSMISSION: CAPABILITY OF BOTH TRANSMISSION AND RECEPTION SIMULTANEOUSLY

MONTANA

LEGEND:

- MOBILE UNITS
- BASE STATION
- CONTROL STATION

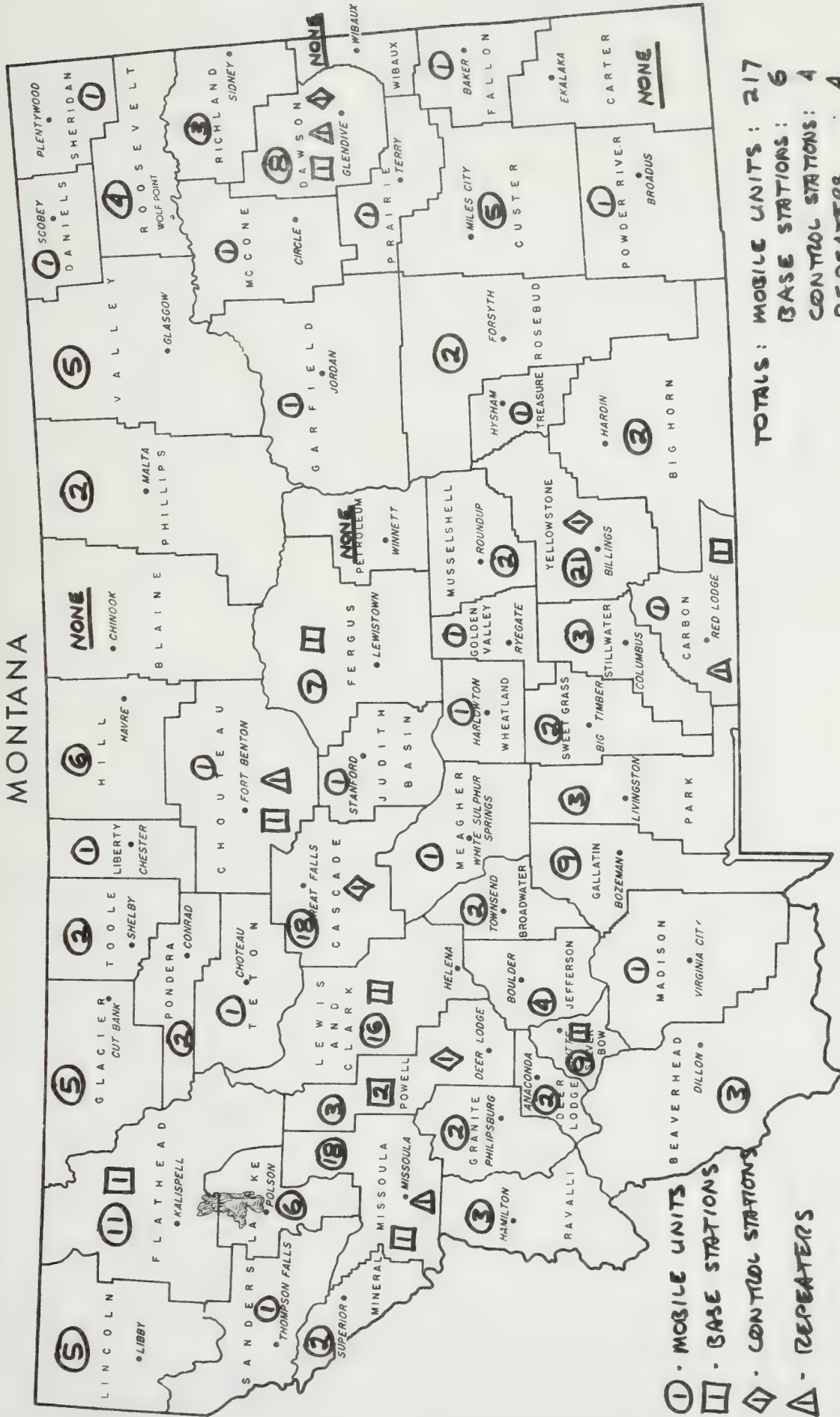
TOTALS:

- MOBILE UNITS: 870
- BASE STATIONS: 43
- CONTROL STATIONS: 22

- ② • MOBILE UNITS
- ① • BASE STATION
- ① • CONTROL STATION
- ① • REPEATER STATION
- ① • RELAY STATION

<u>TOTALS:</u>	MOBILE UNITS:	870
	BASE STATIONS:	43
	CONTROL STATIONS:	22
	REPEATERS:	19
	RELAY STATIONS:	2

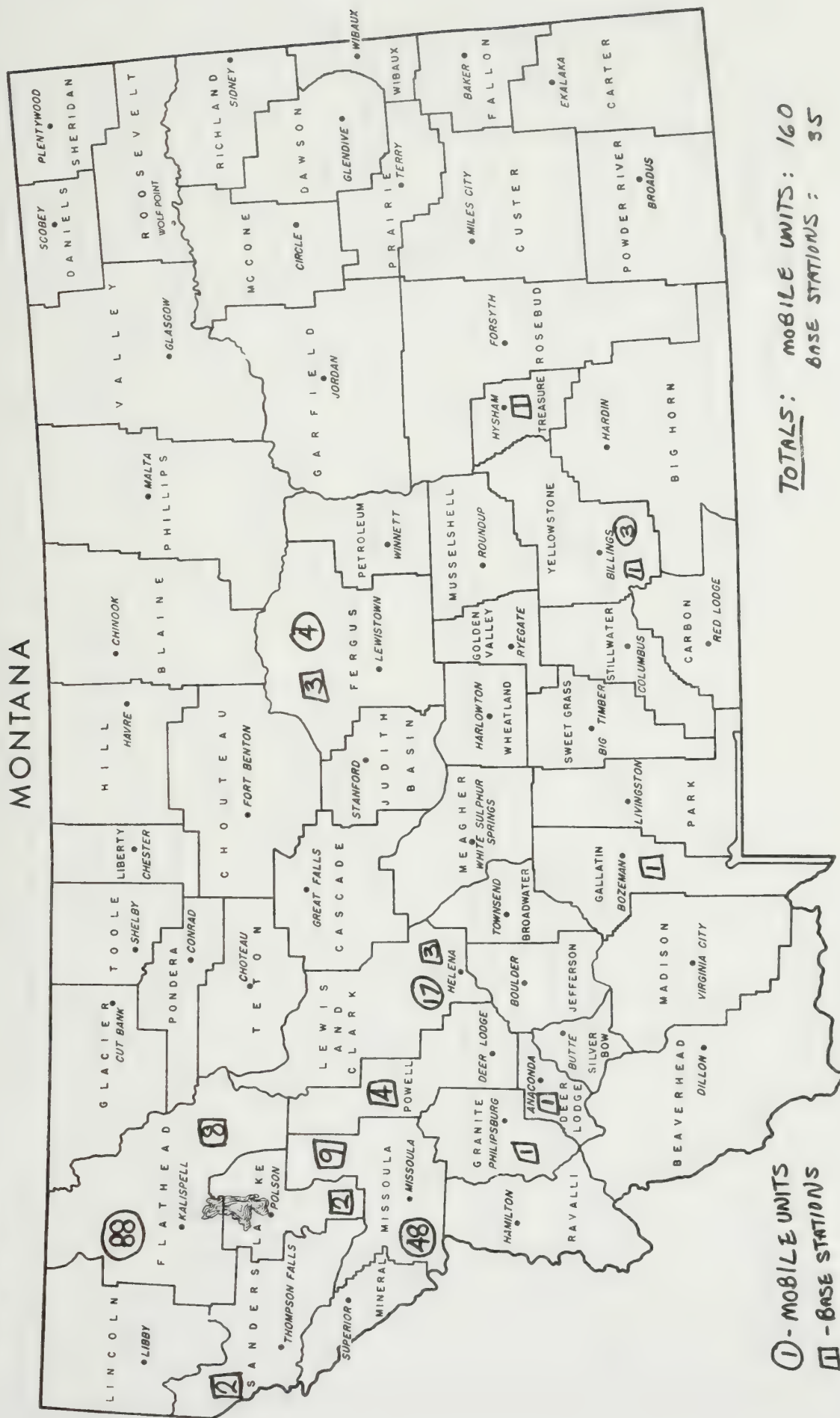
MONTANA



TOTALS: MOBILE UNITS: 217
BASE STATIONS: 6
CONTROL STATIONS: 4
REPEATERS: 4

- ① - MOBILE UNITS
- - BASE STATIONS
- ◇ - CONTROL STATIONS
- △ - REPEATERS

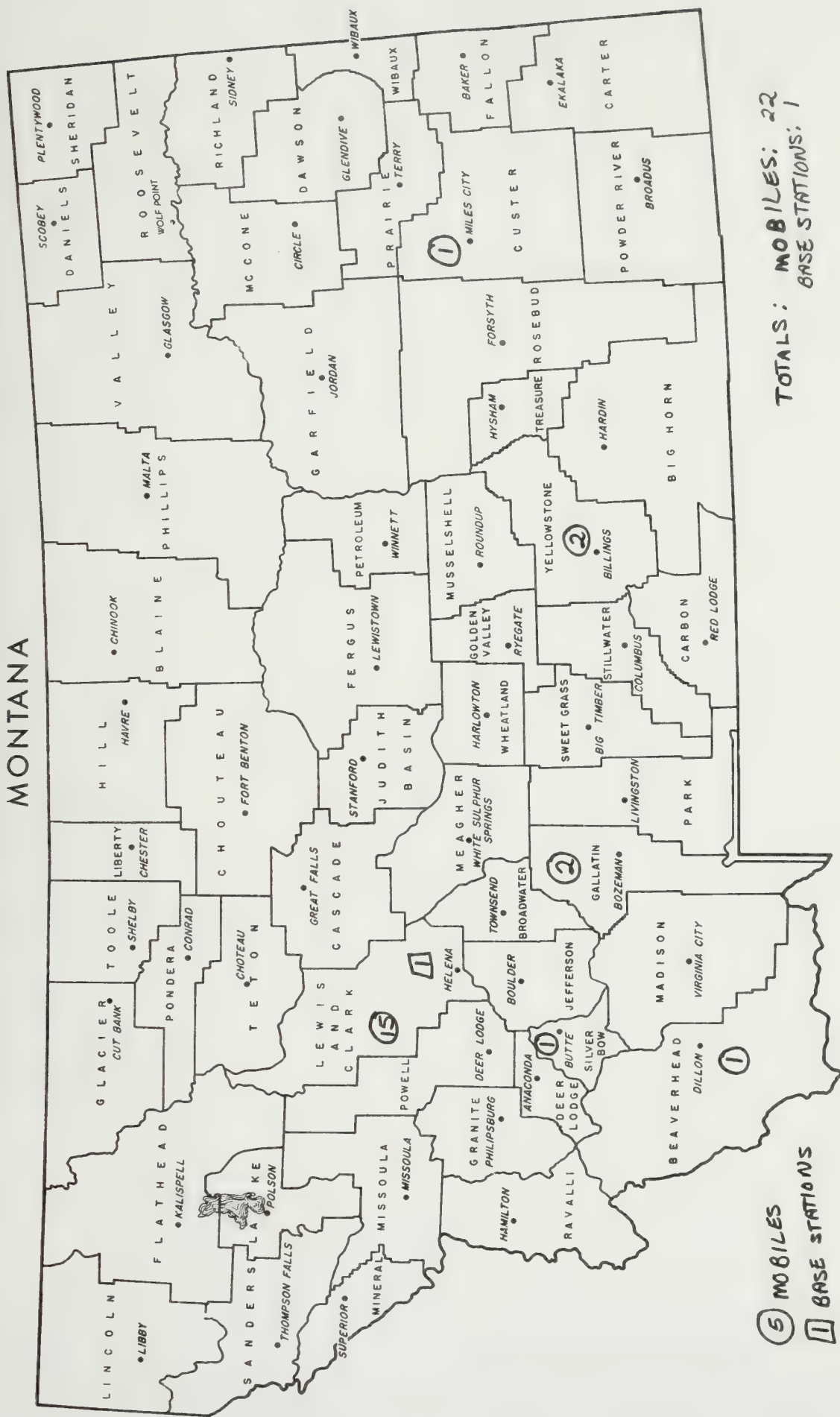
MONTANA



- ① - MOBILE UNITS
- ② - BASE STATIONS

TOTALS: MOBILE UNITS: 160
BASE STATIONS: 35

MONTANA



⑤ MOBILES
① BASE STATIONS

TOTALS: MOBILES: 22
BASE STATIONS: 1

MOBILE UNITS, BY COUNTY
41% OF TOTAL COUNTIES

BIG HORN	15
BLAINE	42
CARTER	6
CASCADE	590 (INCLUDES CITY OF GREAT FALLS)
CHOTEAU	34
CUSTER	18
FLATHEAD	267
GLACIER	156
GOLDEN VALLEY	7
HILL	120
LIBERTY	12
LINCOLN	72
MUSSELSHELL	10
PONDERA	44
POWER RIVER	7
ROSEBUD	15
SANDERS	75
STILLWATER	10
SWEET GRASS	10
TETON	45
TOOLE	38
TREASURE	8
YELLOWSTONE	75

UNIVERSITIES/COLLEGES

* State of Montana Tech. Butte-----

155.835 MHz

155.925 MHz 1 Base 15 Mobile

39.600 MHz

39.820 MHz 1 Base 3 Mobile

*Eastern Mt. College-----

155.940 MHz 1 Base 12 Mobile

155.010 MHz 1 Base 13 Mobile

155.130 MHz 1 Base 13 Mobile

155.610 MHz No Base 6 Mobile

155.940 MHz 1 Base 13 Mobile Security Police

*University of Mt. Missoula-----

155.940 MHz

155.055 MHz 1 Base 46 Mobile

155.940 Mobile Relay R/155.005 MHz

39.600 MHz

39.820 MHz

39.880 MHz

39.940 MHz 1 Base 8 Mobiles

*Northern Mt. College-----

39.600 MHz

39.880 MHz 5 Mobiles

*Montana State U Bozeman-----

10,525 3ea. Speed guns

155.745 MHz 1 Base 20 Mobiles

(Taken from license applications located within the Division
of Communications)

GENERAL INVENTORY LIST:
KNOWN LAND MOBILE EQUIPMENT

STATE AGENCIES AND UNIVERSITIES/COLLEGES:

MOBILE UNITS	1,410
BASE STATIONS	93
CONTROL STATIONS	26
REPEATERS/RELAYS	25

COUNTIES/CITIES (41% OF TOTAL COUNTIES)

MOBILE UNITS ONLY: 1,686 KNOWN RADIOS

EXTRAPOLATED TOTAL

COUNTY/CITY LEVEL: 4,112 MOBILE UNITS

EXTRAPOLATED TOTAL

STATE-WIDE: 5,522 MOBILE UNITS

REGION 1

EXISTING ELECTRONIC SITES ON NFRS LAND

**Denotes site classified according to FSM 2728.22, R-1 Supplement No. 69.

*SCS Data Site which utilizes electronic equipment.

1/ U.S. Geological Survey Site

2/ USDA Forest Service

<u>Forest</u>	<u>Ranger District</u>	<u>Site Name/Location</u>	<u>No. of Users</u>
<u>Beaverhead</u>	Dillon	- **Maverick Mountain	1
		Beagle Spring	1*
		Bloody Dick	1*
		Lemki Pass	1*
		Lemki Ridge	1*
		Mule Creek	1*
	Wise River	- Calvert Creek	1*
		Foolhen	1*
		Wise River	1*
	Wisdom	- Darkhorse Lake	1*
		Slag-a-Melt Lake	1*
	Sheridan	- Clover Meadows	1*
		Divide	1*
		Short Creek	1*
	Madison	- Lower Twin	1*
		Teepee Creek	1*
<u>Bitterroot</u>	Sula	- Sec. 6, T. 1 N., R. 19 W.	3
		Rocky Knob Lodge	1
<u>Clearwater</u>	Pierce	- Hemlock Butte	1
	Palouse	- Elk Butte	12
		McGary Butte	2
	Kelly	- Horseshoe Lake	1
		Cayuse Landing	1
	Lochsa	- Castle Butte	1
		Idaho Point Ridge	1
		Sec. 33, T. 33 N., R. 7 E.	1

<u>Forest</u>	<u>Ranger District</u>	<u>Site Name/Location</u>	<u>No. of Users</u>
<u>Gallatin</u>	Bozeman-Gallatin	- Shower Falls	1*
		Sourdough Lick Creek	1*
		Lick Creek	1*
		Bridger Bowl	1*
		Bangtail	1*
		Battle Ridge	1*
		Hyalite Creek	1*
		Devils Slide Snow	1*
		New World	2*
		Sec. 22, T. 4 S., R. 6 E.	1*
		N. Fk. Brackett Creek	1*
		Bridger Ridge	7
		Cashe Creek	1*
		Taylor Peaks	1*
		Eaglehead	1*
		Carrot Basin	1*
		N. Fk. W. Gallatin	1*
		Eaglehead Mountain	1
	Hebgen Lake	- Sec. 35, T. 14 S., R. 4 E.	1
		Sec. 3, T. 14 S., R. 5 E.	1
		Sec. 21, T. 13 S., R. 5 E.	1
		Madison Plateau	1*
		Black Bear	1*
		Whiskey Creek	1*
		Cabin Creek	1*
		Sentinal Creek Trail	1*
		Hebgen Dam <u>1/</u>	1
		Cabin Spring <u>1/</u>	1
<u>Helena</u>	Helena	- Hogback Mountain	6+1 <u>2/</u>
		MacDonald Pass	10+1 <u>2/</u>
	Townsend	- Duck Creek Pass	1
	Lincoln	- Sec. 21, T. 13 N., R. 10 W.	1
<u>Idaho Panhandle</u>	Wallace	- Lookout Pass	6+1*
		Mullan Pass	1
		Sec. 15, T. 48 N., R. 4 E.	1
	Avery	- 49 Meadows	1*
		**South Butte	1
		Sec. 9, T. 45 N., R. 5 E.	1
		Sec. 10, T. 45 N., R. 5 E.	1
	Fernan	- Killarney Mountain	1
		W. Canfield Butte	1
		Mosquito Ridge	1*

<u>Forest</u>	<u>Ranger District</u>	<u>Site Name/Location</u>	<u>No. of Users</u>
<u>Idaho Panhandle</u>	St. Maries	- Lines Creek	1
		Sandpoint	4
	Bonners Ferry	Bald Mountain	1
		- Black Mountain	6
		Copper Mountain	1
		Dawson Ridge	2
		Eastport	1
	Priest Lake	- Lakeview Mountain	2
	Red Ives	- Medicine Ridge	1*
<u>Kootenai</u>	Rexford	- Black Butte	1
		McGuire Mountain	1 <u>2/</u>
	Yaak	- Hensley Hill	1
	Fortine	- Pinkham Mountain	7
	Troy	- King Mountain	9
	Libby	- Sheldon Mountain	2
		Flower Point	1
		Indian Head Mountain	1
		Little Hoodoo Mountain	1
	Fisher River	- Banfield Mountain	1
		Blue Mountain	8+1 <u>2/</u>
		Calx Mountain	1
		Vermiculite Mountain	1
	Cabinet	- Green Mountain	2
		Minton Peak	1 <u>2/</u>
		Gem Peak	1 <u>2/</u>
<u>Lewis & Clark</u>	Rocky Mountain	- Mount Baldy	1+1 <u>2/</u>
	Belt Creek	- Porphyry Peak	1+1 <u>2/</u>
	Judith	- Highwood Baldy	6+1 <u>2/</u>
	Musselshell	- Howie Mountain	1
		Roughlock Hill	2
		W. Peak Snowy Mountains	1+1 <u>2/</u>
<u>Lolo</u>	Missoula	- Clinton	2
		Kitchen Gulch	1
		Miller Peak	2
		Point Six	6
		Point 118	2
		Sliderock Mountain	1
	Ninemile	- Ellis Mountain	1+1 <u>2/</u>
		Remmick Point	1
		Siegel Pass	2
		Stony Creek	1
		White Mountain	1 <u>2/</u>
	Plains	- Patricks Knob	5+1 <u>2/</u>
		Richards Peak	1 <u>2/</u>

<u>Forest</u>	<u>Ranger District</u>	<u>Site Name/Location</u>	<u>No. of Users</u>
<u>Lolo</u>	Seeley Lake	- Blanchard	1
		Double Arrow	1
		Lake Mountain	1 <u>2/</u>
		Morrell Lookout	1
	Superior	- Bald Mountain	2
		Camels Hump LO	1 <u>2/</u>
		Hoodoo Basin	1*
		Lookout Pass	7+1 <u>2/</u>
		Roland Summit	1
		St. Regis	3
		Sec. 1, T. 18 N., R. 28 W.	2
		Thompson Peak	7
	Thompson Falls	- Clark Peak	6
		**Eddy Peak	1
		Flatiron	1
		Mt. Silcox	1
<u>Nezperce</u>	Clearwater	- Pilot Knob	3
	Salmon River	- Cold Springs Mountain	2
		Coolwater Ridge	1
	Selway	- Fog Mountain Saddle	1
		Sec. 2, T. 30 N., R. 7 E.	1
	Elk City	- Wildhorse Creek	1

<u>Forest</u>	<u>Ranger District</u>	<u>Site Name/Location</u>	<u>No. of Users</u>
<u>Custer</u>	Beartooth	- Dryhead	1
		Grizzly Peak	1
		**Palisades	4
	Sioux	- Ekalaka Hills	2
		Tripoint	1
		Antelope	1
	Ashland-Fort Howes-	Home Creek Butte	6
		Ashland Admin. Site	1
		Cook Mountain	1
	Medora	- Translator Tower Site (Sec. 17, T. 140 N., R. 102 W.)	1
<u>Deerlodge</u>	Deerlodge	- Sec. 20, T. 5 N., R. 12 W.	1
	Jefferson	- Sec. 19, T. 1 N., R. 6 W.	1
		Sec. 19, T. 6 N., R. 4 W.	1
		Jack Mountain	1
	Butte	- Red Mountain	2
		Sec. 18, T. 1 N., R. 7 W.	1
<u>Flathead</u>	Swan Lake	- **Blacktail Mountain	13
		Mt. Aeneas	4
	Hungry Horse	- Desert Mountain	1
	Tally Lake	- Big Mountain	14
<u>Gallatin</u>	Big Timber	- Iron Mountain	1*
		Monument Peak	1*
		Independence	1*
		Baboon Mountain	1*
		E. Fk. Main Aerial Marker	3*
		Picket Pin	1*
		Box Canyon	1*
		Placer Basin	1*
	Livingston	- Rock Creek Drainage	1*
		Mill Creek Drainage (Sec. 6, T. 7 S., R. 11 E.)	1*
		Bald Ridge	1*
		Porcupine	1*
		S. Fork Shields (Sec. 34, T. 6 S., R. 10 E.)	1*
	Gardiner	- Fisher Creek	1*
		White Mill	1*
		Henderson Mountain	1*
		Star Lake	1*
		Sec. 22, T. 9 S., R. 9 E.	1*
		Fisher Creek, E. of Cooke City	1*
		Twin Peaks	1

REPORT TO THE
MONTANA TELECOMMUNICATIONS PROJECT

Land/Mobile Needs Assessment for
Beaverhead County and
the City of Dillon

Analysis and Recommendations for the
Land/Mobile Needs Assessment Methodology

Prepared by

Beverly R. Magley
April 20, 1981

TABLE OF CONTENTS

	<u>Page</u>
I. INTRODUCTION	
A. General Information	1
II. EXISTING COMMUNICATIONS SYSTEM: BEAVERHEAD COUNTY AND CITY OF DILLON	
A. Central Dispatch System	3
B. County Commissioner	20
C. Sheriff	24
D. Search and Rescue	29
E. Emergency Medical Services	34
F. Fire Department	39
G. Civil Defense	46
H. Mayor	50
I. Police	64
III. ASSESSMENT AND CRITIQUE	
A. Interviews Order	71
B. Suggested Revisions for Land/Mobile Needs Assessment Methodology	72
i Revision for Agencies Not Served by a Central Dispatch System	76
ii Revision for Agencies Served by a Central Dispatch System	86
C. Critique of Monitoring Forms	104
D. Items for Physical Inventory	105
IV. APPENDICES	
Appendix A Beaverhead County 1980-81 Mill Levies . .	A-1
Appendix B LEAA and EMS Functions	B-1
Appendix C Radio and Telephone Tallies for City of Dillon	C-1
Appendix D Sample Chart for Central Dispatch System Monitoring	D-1
Appendix E Central Dispatch System Telecommunica- tions Data	E-1
Appendix F Telephone and Call Numbers of Dillon and Beaverhead County Personnel	F-1

I. INTRODUCTION

One goal of the Telecommunications Project is the development of a method of assessing the telecommunications needs of Montana local governments. This can be accomplished, in part, by collecting information regarding Montana's existing land/mobile radio system capabilities, and identifying the perceived needs of land/mobile radio system users. It is these areas which are dealt with in this report.

The study serves a dual purpose: (1) to gather the actual data generated by the users of a working land/mobile radio system within Beaverhead County; and (2) to assess and critique the draft methodology, suggesting revisions and clarifications for the interview process.

A. GENERAL INFORMATION: BEAVERHEAD COUNTY

Beaverhead County is located in the extreme southwest corner of the state of Montana. The county borders the State of Idaho to the west and the south; Madison County and Silver Bow County to the east; and Deer Lodge, Ravalli, and Granite Counties to the north.

Beaverhead County is a large county, with 5,551 square miles of area. Its mountainous terrain is sparsely populated, and approximately 75 percent of its population of 8,204 is located in or near the county seat of Dillon (elevation 5,406). 1980 census figures project almost no change in population for 1990 and 2000. The taxable valuation of the county in 1980-81 is \$17,947,567, an increase of \$1,562,229 since 1979-80 (see Appendix A).

Ranching continues to be the primary industry in Beaverhead County with one-half of the total land of the county in livestock ranching, and general farming and irrigation. Primary products from these industries are cattle, sheep, hay, wheat, and barley. Forest covers much of the remaining land, with predominant forest types of lodgepole pine and Montane (white pine, Douglas fir, spruce fir). Silver, lead, gold, thorium and iron have been developed in the county. There is currently some oil exploration in the Big Hole area and iron ore exploration near Dillon. Neither of these have been developed.

Beaverhead County averages 10"-18" of precipitation per year. Major mountain ranges are the Bitterroot, the Beaverhead, the Centennial and the Pioneer Mountains, the latter rising over 9000'. Primary rivers are the Big Hole, the Beaverhead, the Wise, and Red Rock River. Dams on the Red Rock River have created the Lima reservoir and Clark Canyon Recreation Area (Hap Hawkins Lake).

Interstate Route #15 passes northsouth through Beaverhead County and Dillon. Principal and secondary highways give access to neighboring counties. Burlington Railroad services Dillon, the major economic center of the county. There is a general aviation airport near Dillon.

II. EXISTING COMMUNICATIONS SYSTEM: CITY OF DILLON AND COUNTY OF BEAVERHEAD

This section contains the information collected in Beaverhead County and the City of Dillon. The data for each department or agency is presented individually. All interviews were conducted with departmental supervisors unless otherwise noted.

The draft methodology was used with no revisions except to drop non-applicable questions or forms where the interviewer determined them to be irrelevant to the particular department or agency. The topics discussed were: general information; land/mobile system identification, organizational structure and demographic data; communication system functions; user access; dispatch data for telephone and for radio; computer terminal functions; maintenance; problem reviews; and suggested improvements.

All interviews were conducted in a face-to-face situation with a minimum of interruption. Some questions needed to be clarified or reworded; all answers were recorded as the interview progressed. At times the answer was read back to the interviewee to confirm the accuracy of the recorded statement. Form 5N, concerned with itemizing the functions of each separate agency, was totally dropped from this report. I determined the data collection and time involved in satisfactorily completing this task to be beyond the scope of this project. Appendix B contains partial lists of law enforcement agency and emergency medical systems functions.

As an alternative to completing Form 5N, I designed for each agency/department a diagram of their own communication systems, and the contacts that they were most likely to make. These diagrams are only as comprehensive as the information which I collected through the series of personal interviews with agency/department supervisors. Data from the physical inventory will certainly aid in the construction of more complete and accurate telecommunication system drawings.

Departmental officials or representatives who were interviewed for the project are:

Beaverhead County

County Commission - Bob Miller, Commissioner
 Sheriff's Department - Rick Later, Sheriff
 Central Dispatch System - Margie Stefanatz
 Search and Rescue - Mike Shafer, Commander
 Emergency Medical Services - Gale Murray, President
 Volunteer Fire Department - Mike Swetish, Chief
 Civil Defense - Roger Johnson, Director

City of Dillon

Mayor - Ray Lynch
 Police Department - Tom Depew, Chief
 Engineer - Bob Cottom

Beaverhead Electronics - Harvey Lake, Owner

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

GENERAL INFORMATION

Agency Beaverhead Central Dispatch System (CDS)

Agency function (i.e. law enforcement, . . .) to receive and dispatch
all information to participating departments and agencies.

Address Beaverhead County Courthouse - Dillon, Mt. 59725

Telephone 683-2383/2333/2311

Manager/Communications N/A

Communications Engineer/Planner/Technician Harvey Lake, Beaverhead
Electronics

Other key personnel:

Head Dispatcher - Margie Stefanatz

LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch. Beaverhead County

ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

- Governmental Entity Organization Structure (Form 1N)
- Agency/Department Management Structure (Form 2N)
- Special Interagency Relationships (Form 3N)

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

2. Demographic data of the defined system. Review of this data is intended to include but not be limited by the questions set forth on Form 4N.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

o COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? See Communications diagram

- What establishes the legal mandate to provide the service? Does it clearly define the client system and geographic jurisdiction? City and county authorized
Yes

- How is the quality of service measured to insure compliance with legal mandate? Sheriff oversees operations

- Is an annual report available for the department or agency?
☐ Yes ☒ No / Written logs are kept and could be seen.

FORM 6N

TELEPHONE ACCESS SYSTEM DATA

Name of telephone service provider (i.e., common carrier - Bell, GTE, . . .)

MOUNTAIN BELL

Does department have separate emergency and administrative phone numbers?

☐ Yes ☒ No1. If no, how many incoming lines are there? Eight (8)2. If yes, how many incoming lines are there for: Emergency _____
Administration _____3. Does the department utilize 911? ☐ Yes ☒ NoIf yes, explain: Expect to utilize 911 next year.4. How many unlisted number lines does the department have for its own
business? Sheriff 1/Fire 0/Police 1/5. Are telephone lines recorded? Yes ☐ No ☒

What is the volume of phone calls? (Enter below.)

Telephone Number	Total Number of Calls 4 MONTHS		Total Number of Calls During Monitored Busy Period POLICE & SHERIFF ONLY	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
	1,343	1,665	37	1
Length of Busy Period (Hours) <u>5 hours</u> Time and Date of Monitoring <u>8/25 - 9/7/80</u> <u>9 p.m. - 2 a.m.</u>				

NOTE: See Appendices I, II, and III if telephone volume data is not available and must be collected.

FORM 6N (Continued)

o What percent of the time are all lines busy? (If possible, obtain from telephone company percent of calls which received a busy signal.) (answer is below)

o What are the costs? (Enter below.) N/A for telephone only

TOTAL SYSTEM COSTS: \$67,592.76 FY80-81

Type of Line	Installation	Monthly
Emergency		
Administrative		

o Is there any backup telephone equipment? Yes ☒ No ☐

If yes, describe backup. Mountain Bell has auxiliary Power Plant.

o Do the operators handle telephone calls for other services (e.g., fire, public works)? Yes ☒ No ☐

If yes, which services? Sheriff
Fire
Police
EMS
Civil Defense
Search & Rescue
Head Dispatcher
County Commissioner

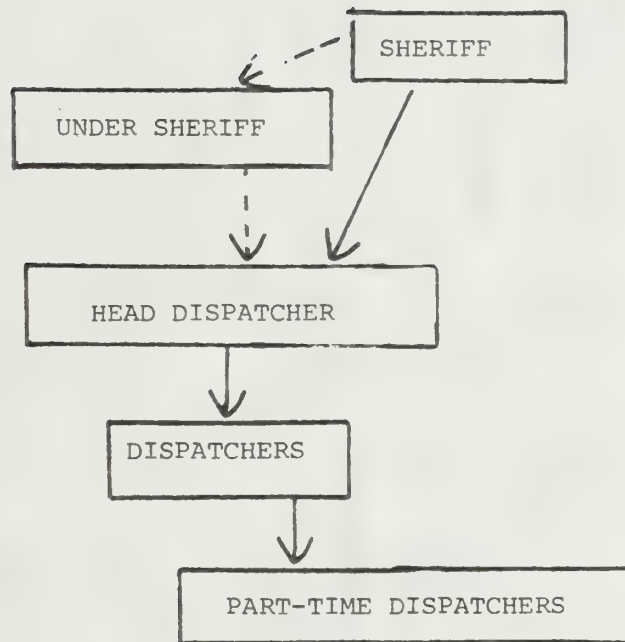
*Sheriff estimates that the "lines" are busy about once in a month. He believes that it is the circuit 23_ which gets busy, since the sheriff, the police and the hospital numbers all begin with 23_.

Beaverhead County officials would have to formally request Mountain Bell to monitor the lines. Mountain Bell will do that as a customer service.

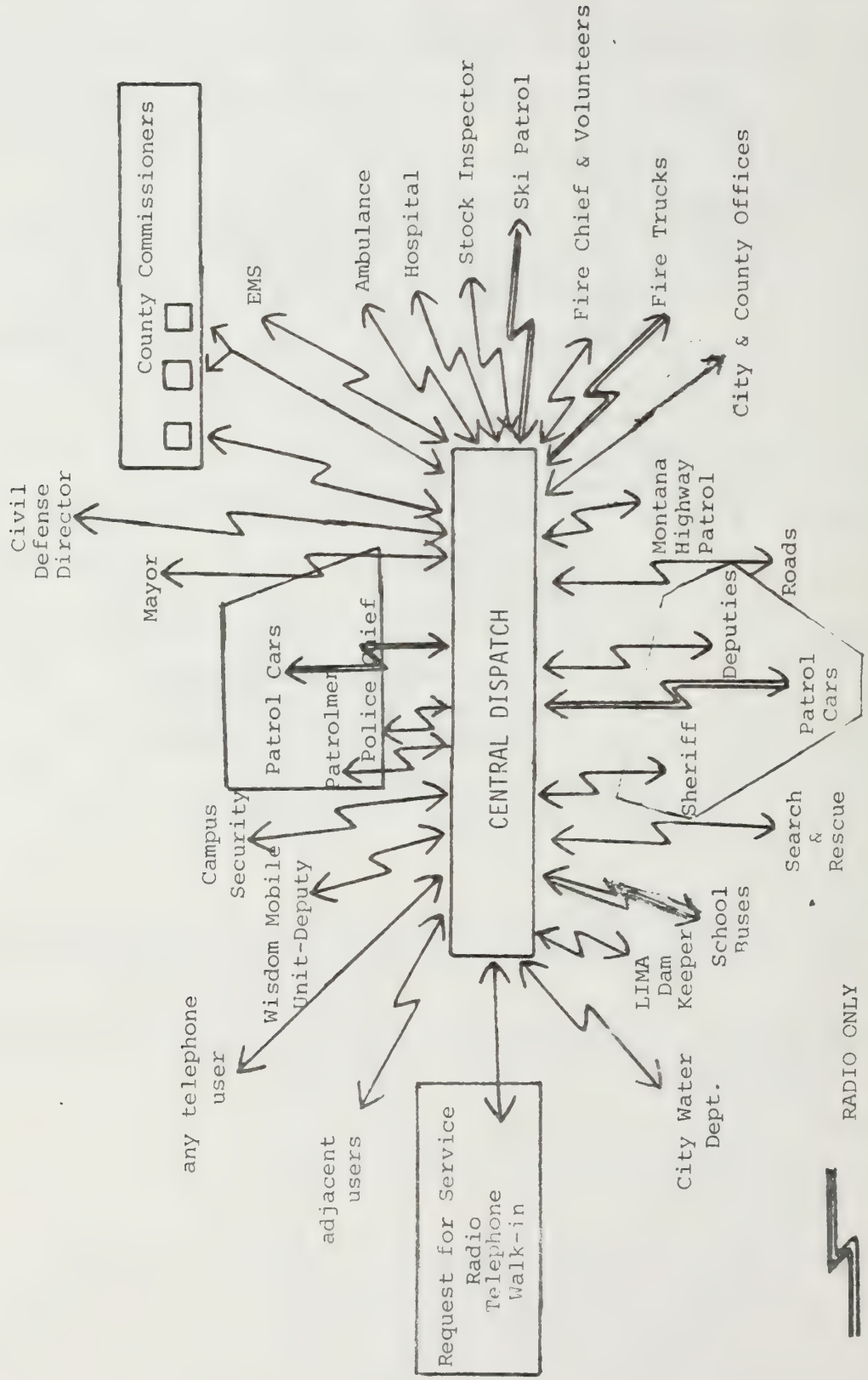
CENTRAL DISPATCH SYSTEM
ORGANIZATIONAL STRUCTURE

7

Form 2N



CENTRAL DISPATCH SYSTEM
BEAVERHEAD COUNTY
COMMUNICATION SYSTEM



MONTANA



FORM 7N

SERVICE/COMPLAINT SYSTEM DATAUser Access

1. In the department, who answers initial service or complaint calls (i.e., secretary, clerk, switchboard operator, dispatcher, . . .)?

Secretary: 8AM-5PM Mon-Fri answers - Dispatchers answers all others 24 hrs/day walk-ins.

2. What percent are received via telephone 54%, radio 35%, and walk-in 11%?
(3,008) (1,995) (617)

3. Number of complaint positions (total). Six (6). Four full-time & five part-time.

4. What is the position-manning schedule? 7AM-3PM/3PM-11PM/11PM-7AM

7 days a week

5. Describe capabilities provided at each position?

• Position No. 1

• Position No. 2

6. Does the complaint taker maintain some type of status system (i.e., board, file, . . .)? ☒ Yes ☐ No Explain: Keep record log of all communications transactions involving telephone or radio.

7. What special emergency procedures are set-up for the service/complaint room? Dispatcher has 7 day-24 hour contact with: Sheriff, undersheriff, one deputy, and police chief, via pagers.

8. Describe any other activity in the service/complaint room besides the taking of service requests or complaints. (1) Monitor the jail via closed circuit television (2) Dispatch messages

9. How do messages get from the call taker to the dispatcher? same person

DISPATCH SYSTEM DATAo Dispatch Facilities Data

1. Number and location of dispatcher positions? One position
in dispatch room
2. What is the dispatch position manning schedule? 7AM-3PM; 3PM-11PM;
11PM-7AM 7 days/week
3. Describe capabilities provided at each position.
- Position No. 1 _____
 - Position No. 2 _____
 - Position No. 3 _____
4. Does the dispatcher have supervisory control over remote transmit locations? ☐ Yes ☐ No
5. Does the dispatcher switch these locations in and out, or are they connected at all times? _____
6. Are radio channels recorded? ☐ Yes ☒ No

o Resource Control Data

1. Who selects service response? Dispatcher
2. Who services or prepares complaint form? Dispatcher
3. Who marks service unit back in service? Dispatcher

4. How many status levels (i.e., available, enroute, on assignment, out of service, . . .) are there for field personnel? N/A
5. What are they? _____
6. Are any levels of status of low priority so that a man assigned to a lower level complaint can be reassigned to a higher level complaint?
Yes ☒ No ☐
7. Describe the status level priorities and who decides to reassign a man. Emergency calls receive priority.
8. Are there any priorities assigned to complaint assignments (e.g., immediate dispatch, delayed dispatch). Yes ☐ No ☒
9. If yes, describe the priorities and how the priority of a complaint is determined, and then communicated to services provided.
Sheriff or the officer on duty decides to reassign personnel. The dispatcher makes the primary response judgment. Personnel arriving at call location assess the situation and request support if determined necessary.

Dispatch Volume Data

1. What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages 4MONTHS	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)
KXK 427	1787	87	No record
WAH 92	128		
KLV 872	62		
WCU 966	18	Length of Busy Period (hours) <u>5 hrs. each</u>	
		Time and Date of Monitoring <u>8/25 - 9/7/80 9PM-2AM</u>	
		Police & Sheriff only	

NOTE: See Appendices I, III, and IV if radio volume and message length data is not available.

2. What was the average message length N/A seconds?
3. Does the dispatcher handle radio messages for other services (e.g., fire, public works)? ☒ Yes ☐ No
4. If yes, which services? Sheriffs' Dept./Police Dept./Fire Dept./MT.
Fish & Game/EMS/Search & Rescue/Stock Inspector/Civil Defense/Ambulance
County Roads Crew/Ski Patrol/Hospital/County Commissioners/Mayor/
5. Other data: Campus Security/Wisdom Mobil Unit-Deputy/City Water/Lima
Keeper/School buses
-

FORM 9N

COMPUTER TERMINAL SYSTEM DATAComputer Terminal Facilities Data

1. List below the computer and/or teletypewriter terminals the agency uses. Be sure to indicate if a terminal is shared between two or more networks or information retrieval systems. _____

(NLETS & NCIC) One teletype terminal

2. Who operates the terminals? Dispatcher

3. What are the physical locations of the terminals? Directly across
hall from dispatch room

4. If the terminal position is not equipped for radio operation how does the radio dispatcher send information requests to the terminal operator and get back the required information? Walks across the
hall and does it herself.

Resource Control Data

1. If each terminal is not at a dispatcher location, is the terminal location equipped with a control unit so that the terminal operator can communicate with field forces? Yes ☐ No ☒ Has a telephone in the teletype room.

2. If no, how is the information transferred to the field forces?

Walks across hall to dispatch rooms.

Terminal Volume Data

1. For each data file what was the volume of information requests, entered messages, cancelled messages during past year? (Enter below.)
4 months

Computer System	Number of Information Requests	Number of Messages Entered	Number of Messages Cancelled	Number of Miscellaneous Uses (specify what)
NCIC		6	2	

2. Other data: _____

FORM 10N

MAINTENANCE SYSTEM DATAMaintenance ServiceDoes agency have own maintenance service organization? ☒ Yes ☐ NoSelf-Servicing Agency

1. Number of technicians _____
2. Location of service facility(s) _____

3. Are there any current plans for service-shop changes? Will renew and
clarify yearly contract with Beaverhead Electronics in hopes of speeding
up the repair process.
4. Other data: _____

Contract or Other Service

1. Who is the servicing agency (company, other agency, etc.)? _____
Beaverhead Electronics
2. Where are they located? 365 No. Parkview
Dillon, Mt.
3. Number of technicians? 1 part-time
4. Must mobiles go to shop for service? ☒ Yes ☒ No
5. Other data: Depends on type of repairs

6. Average length of stay in shop? Variable
7. Yearly expenditure on maintenance? Contract: \$6500 FY80-81
8. Design system recommendations: The department would like to incorporate
highband with lowband radios so that they have crosspatch possibilities.

(All information here recorded from interview with Sheriff, unless otherwise noted.)

FORM 11N

PROBLEM REVIEW AND SUMMARYo Potential Problem Areas

1. Coordination and interface with others Officials & employees of Beaverhead County & the City of Dillon indicated that interagency support & cooperation was totally satisfactory. The degree of coordination was commented upon favorably time & again, and seems commendable.

2. Preparedness for Emergencies (record on reverse side).

- A ● What can cause a major element of the system to fail?
Power failure by Rural Electric Association.
- B ● How likely is each possible cause of failure?
Not very likely. Once in past 5 years.
- C ● Is it likely that an element and its back-up will fail
at the same time, for the same reason? No. The backup is a gas powered generator. A 100 gal. tank has been ordered.
- D ● Is the cause that produces a failure likely to create also
an unusually heavy demand for services? No.
- E ● Can the primary back-up provide an adequate level of service
in most situations? Always
- F ● If the primary back-up fails, will the secondary back-up
(if there is one) be able to maintain an adequate level
of service? No. secondary
- G ● How quickly can the back-up facility be put into operation?
In the time it takes to walk outside and start the generator
(about 5-7 minutes).
- H ● Is maintenance service provided on a 24-hour per day,
7-day per week basis to ensure continuous system operation?
Yes. The generator is also tested once each week and run for
1/2 hr. to ensure proper operation.
- J ● Are communication equipment and personnel well protected
against damage and interference with their duties? Yes. They
are behind a locked door. Plans are to install an intercom
between the dispatch room & the walk-in lobby for greater efficiency.

3. Radio Coverage and Interference

- K ● Traffic (radio) density Approximately 20 different users of
(information from H. Lake, Beaverhead Electronics)
- L ● Interference (co-channel, adjacent channel, intermodulation

...) Skip!!! For all LB users, especially in summer, and during daylight hours. Beaverhead County has "dead" areas in NW & (Wise River & Big Hole) section of county. They must call Anaconda or Phillipsburg dispatcher, who relays to Dillon. A repeater system for that area will be proposed by the Sheriff at some future time.

4. Control Center Facilities _____
5. Telephone
- N ● Trunk line _____
 - P ● Control pair _____
 - Q ● Switching _____
 - R ● Other _____
6. Maintenance Support
- S ● Telephone Mountain Bell
 - T ● Land/Mobile Beaverhead Electronics
 - W ● Other Companies in Butte or Bozeman can be called in.
7. Cost of Present Operations \$67,592.76 FY80-81
8. F.C.C. Compliance No problems

Other Issues

1. New Technology If state goes to HB for law enforcement personnel, Beaverhead County will support it.
2. Frequency Spectrum Availability _____
3. Projected Expenditures No significant changes expected
4. National Telecommunication Policy No comment
5. Legal and Other External Constraints Awaiting decision of legislature concerning the sharing of equipment & manpower with the Montana Forest Service. Currently an unofficial verbal agreement exists.
6. Funding Constraints All officials interviewed indicated satisfaction with the present system and were able to perform their duties with existing

II. B. COMMISSIONER BOB MILLER

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

o GENERAL INFORMATIONAgency Beaverhead County CommissionAgency function (i.e. law enforcement, . . .) Executive

Branch of County Government _____

Address Beaverhead County Courthouse/Dillon, Mt. 59725Telephone 683-5425Manager/Communications N/ACommunications Engineer/Planner/Technician Harvey Lake ofBeaverhead Electronics - unofficial

Other key personnel:

There are three county commissionerso LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch. Entire County, p. 6.

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

- Governmental Entity Organization Structure (Form 1N)
- Agency/Department Management Structure (Form 2N)
- Special Interagency Relationships (Form 3N)

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

2. Demographic data of the defined system. Review of this data is intended to include but not be limited by the questions set forth on Form 4N.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? Residents of Beaverhead County

- What establishes the legal mandate to provide the service?
Does it clearly define the client system and geographic jurisdiction? Montana Codes
Yes

- How is the quality of service measured to insure compliance with legal mandate? Elected officials have no official measurement.

- Is an annual report available for the department or agency?
☒ Yes ☐ No

BEAVERHEAD COUNTY
GOVERNMENT ENTITY ORGANIZATION STRUCTURE

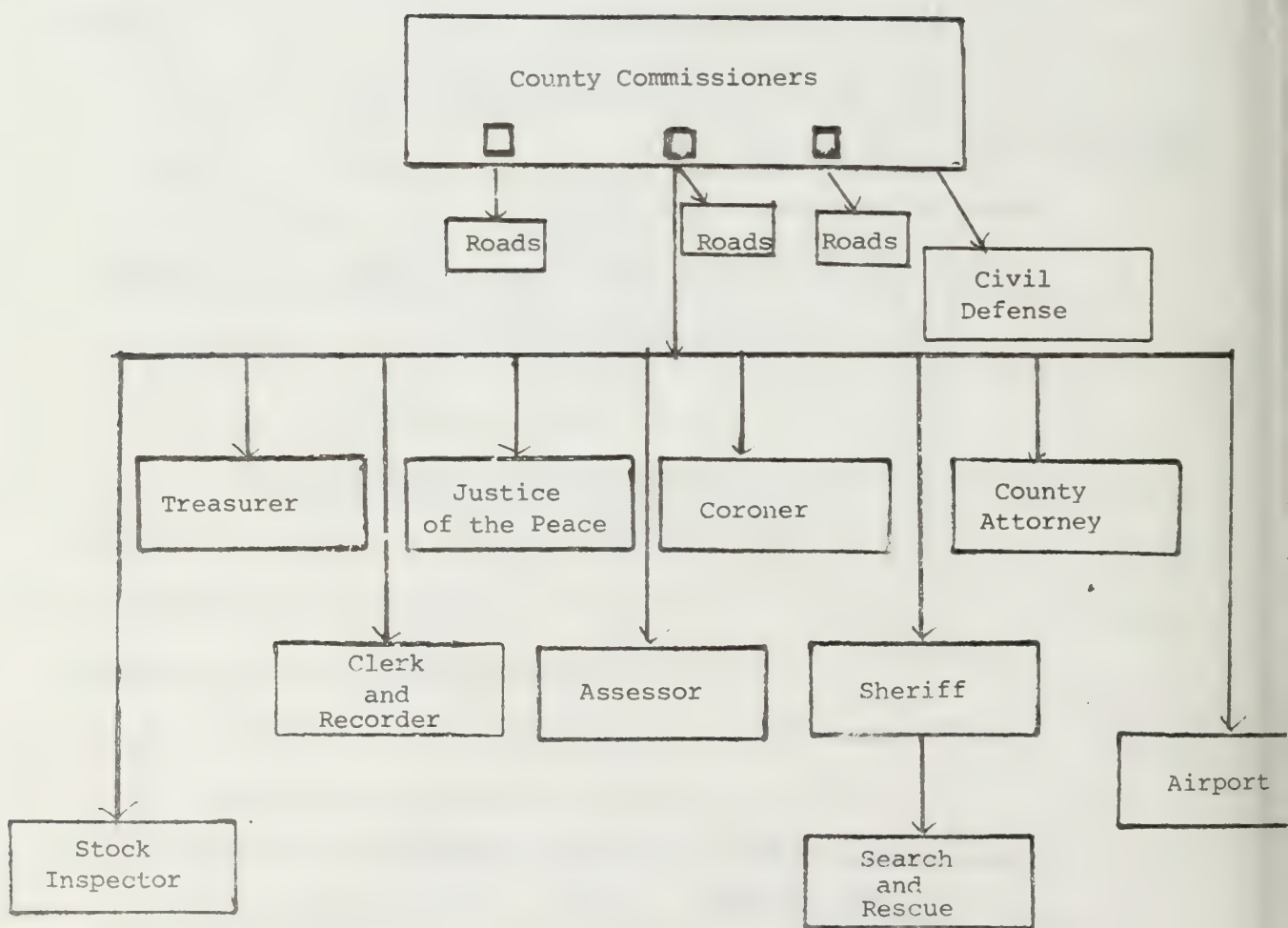


Chart designed from information available in Montana Codes Annotated 1979

FORM 4N

SYSTEM DEMOGRAPHIC DATA

In order to effectively develop a system which will serve not only the needs today but also the needs of the future it is necessary to have a good estimate of the environment in which the agency will operate for the next 5-10 years. Below are listed some categories of change which are important. Please comment on them.

o Population Trends

Steady-increase-decrease? How much? Shifts within area? Slight,
steady decrease. 1970-80 the county lost 500 residents. Shift (increase)
in population density surrounding Dillon.

o Area Growth

Will present political boundaries change to include more area? Which way
will they go? (Include "future" map, if possible.) No expected changes.

o Tax Bases & Budgets

1. What significant changes might occur in the tax base? The tax base
has been increasing slowly due to new construction
2. Will operating budgets be affected? How? If Class 6 of the cattle tax
is eliminated by the 1981 Montana legislature, the county will lose
approximately \$1 million, which is one-half of their operating budget.

o Economic Class Proportions of Population

As population grows will low - middle - high income groups change in terms
of % of total population?

If so, how? If the petroleum, and/or the iron ore discoveries are developed,
the medium income tax base will probably increase.

o Political Trends

Will form of government change? No changes foreseen

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

o GENERAL INFORMATIONAgency Beaverhead County Sheriff's DepartmentAgency function (i.e. law enforcement, . . .) law enforcementAddress Box 109, Dillon, Mt. 59725Telephone 406-683-2383Manager/Communications NoneUnofficial Communications Engineer/Planner/Technician Harvey Lake of
Beaverhead Electronics

Other key personnel:

Undersheriff Mark Doeringo LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch, Beaverhead County, p. 6.

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

- Governmental Entity Organization Structure (Form 1N)
- Agency/Department Management Structure (Form 2N)
- Special Interagency Relationships (Form 3N)

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

2. Demographic data of the defined system. Review of this data is intended to include but not be limited by the questions set forth on Form 4N.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

o COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

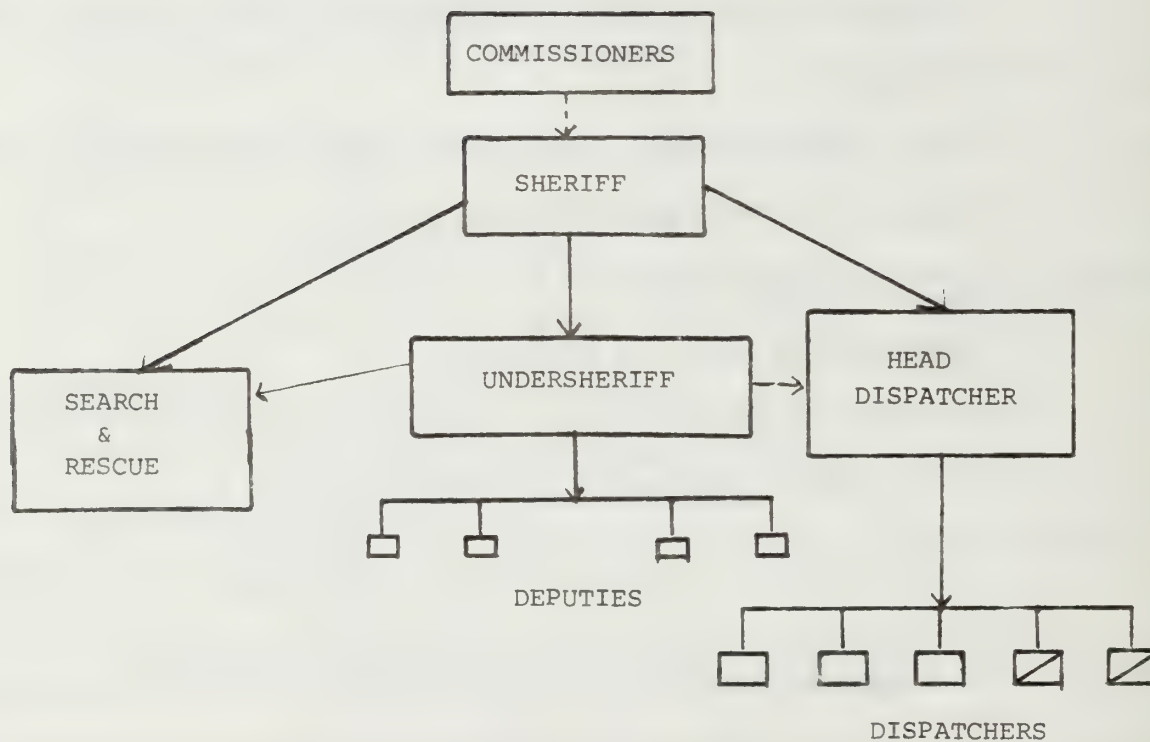
- Who are the primary and secondary clients of the defined system? Residents of Beaverhead County

- What establishes the legal mandate to provide the service?
Does it clearly define the client system and geographic jurisdiction? Montana Codes Annotated 1979
Clearly defined County wide system

- How is the quality of service measured to insure compliance with legal mandate? No official measure. FBI or Attorney General can be called in specific complaint cases.

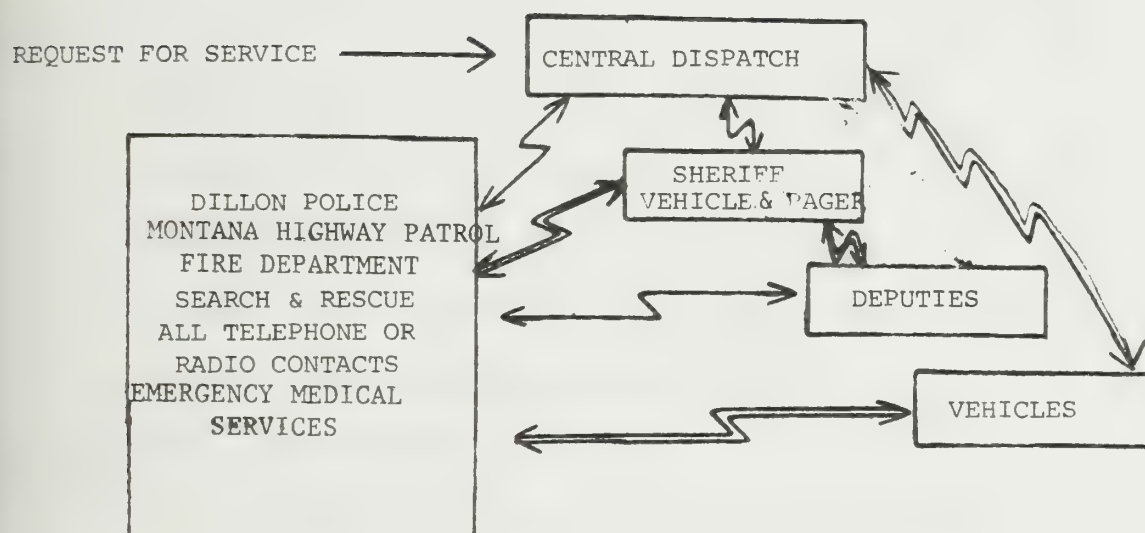
- Is an annual report available for the department or agency?
☒ Yes ☐ No Monthly and quarterly reports
- Does the department or agency have a designated communication center in the defined area for receipt of complaints and dispatch or coordination of resources?

BEAVERHEAD COUNTY SHERIFF
ORGANIZATIONAL STRUCTURE



☐ Full-time
☒ Part-time

BEAVERHEAD COUNTY SHERIFF'S DEPARTMENT COMMUNICATION SYSTEM



RADIO ONLY



TELEPHONE ONLY



RADIO AND TELEPHONE

What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages Sent-Rec 1980 4 months	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)
KXK 427	374	15	
WAH 92	9	Length of Busy Period (hours) 5 hrs/day	
KLV 872	6	Time and Date of Monitoring 8/25-9/7/80 9 PM-2 AM	

What is the volume of phone calls? (Enter below)

Telephone Number	Total Number of Calls 1980-1981		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
	251	907		
	Length of Busy Period (hrs) 5 hrs/day			
	Time and Date of Monitoring 8/25-9/7/80			

What percent of your service/complaint requests are received via:

Telephone	64%	(1158)
Radio	21%	(389)
Walk-in	15%	(268)
		(1815)

Terminal Volume Data

For each data file what was the volume of information requests, entered messages, cancelled messages during past year? (Enter below)

Computer System	Number of Information Requests	Number of Messages Entered	Number of Messages Cancelled	Number of Miscellaneous Uses (specify what)

(see Appendix E E-6)

II. D. COMMANDER MIKE SHAFER

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

GENERAL INFORMATIONAgency SEARCH & RESCUE (Volunteer)

Agency function (i.e. law enforcement

To aid law enforcement & emergency aid agencies in search & rescue
operations if authorized by sheriff.

Address Mike Shafer/229 W. Morse/Dillon, Mt.59725Telephone 683-5384 (home) 683-2383 (sheriff)Manager/Communications Harvey Lakenonofficial Communications Engineer/Planner/Technician H. Lake ofBeaverhead Electronics

Other key personnel:

Sheriff R. LaterLAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch, Beaverhead County, p. 6.

ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

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NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

o COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

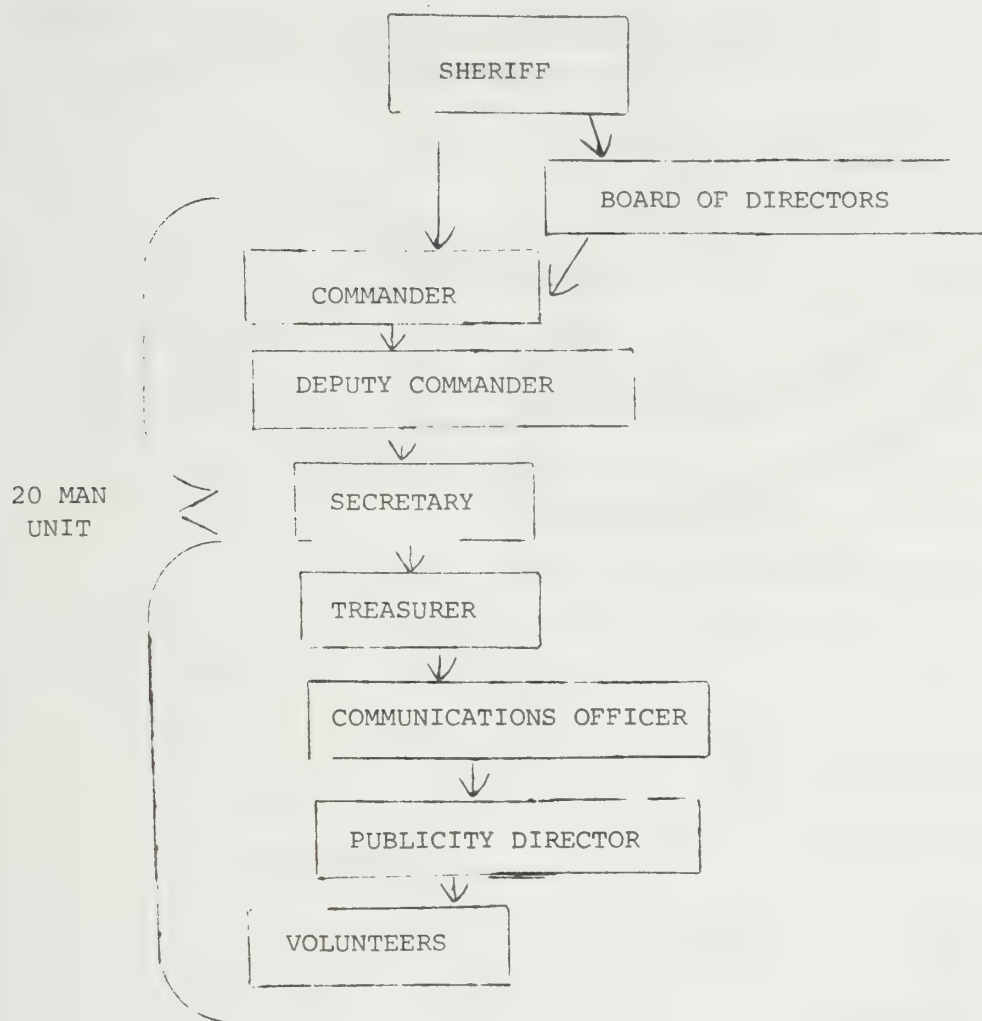
- Who are the primary and secondary clients of the defined system? N/A

- What establishes the legal mandate to provide the service? Does it clearly define the client system and geographic jurisdiction? N/A

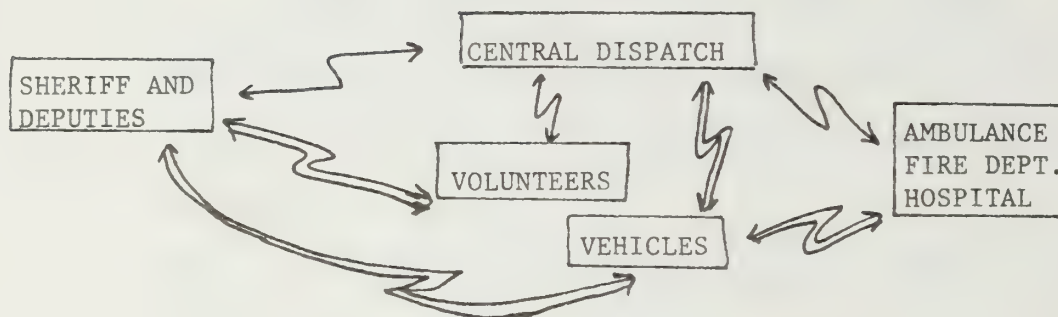
- How is the quality of service measured to insure compliance with legal mandate? Unit is under direct supervision
of Sheriff

- Is an annual report available for the department or agency?
☐ Yes ☒ No

BEAVERHEAD COUNTY SEARCH AND RESCUE
ORGANIZATIONAL STRUCTURE



BEAVERHEAD COUNTY SEARCH AND RESCUE
COMMUNICATION SYSTEM



RADIO ONLY



TELEPHONE ONLY



RADIO AND TELEPHONE

What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages SEPT-DEC 1980	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)
KLV 872	2		
WCU 966	1		

Length of Busy Period (hours) _____
Time and Date of Monitoring _____

What is the volume of phone calls? (Enter below)

Telephone Number	Total Number of Calls SEPT - DEC 1980		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
	0	0		

Length of Busy Period (Hours) _____
Time and Date of Monitoring _____

What percent of your service/complaint requests are received via:

Telephone _____ 0 (0)
Radio _____ 100% (3)
Walk-in -- 0 (0)

The department has 11 land/mobile radio units. Eight were bought with Beaverhead County Revenue Sharing monies.

The department pays \$18.00 yearly for its percentile usage of the repeater station. Two portable radios (5-watt Portacoms) are tied to the repeater system.

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

o GENERAL INFORMATIONAgency Emergency Medical Services (EMS)Agency function (i.e. law enforcement, . . .) To provide
emergency medical servicesAddress Gale Murray, President, Beaverhead EMS Corp.; P.O. Box 1106
Dillon, Mt. 59725Telephone 683-2333

Manager/Communications _____

Unofficial Communications Engineer/Planner/Technician Keith ReederOther key personnel:

_____o LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch. No map available from E.M.

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

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- Special Interagency Relationships (Form 3N)

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

2. Demographic data of the defined system. Review of this data is intended to include but not be limited by the questions set forth on Form 4N.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? Persons requiring emergency medical services who request EMS help.

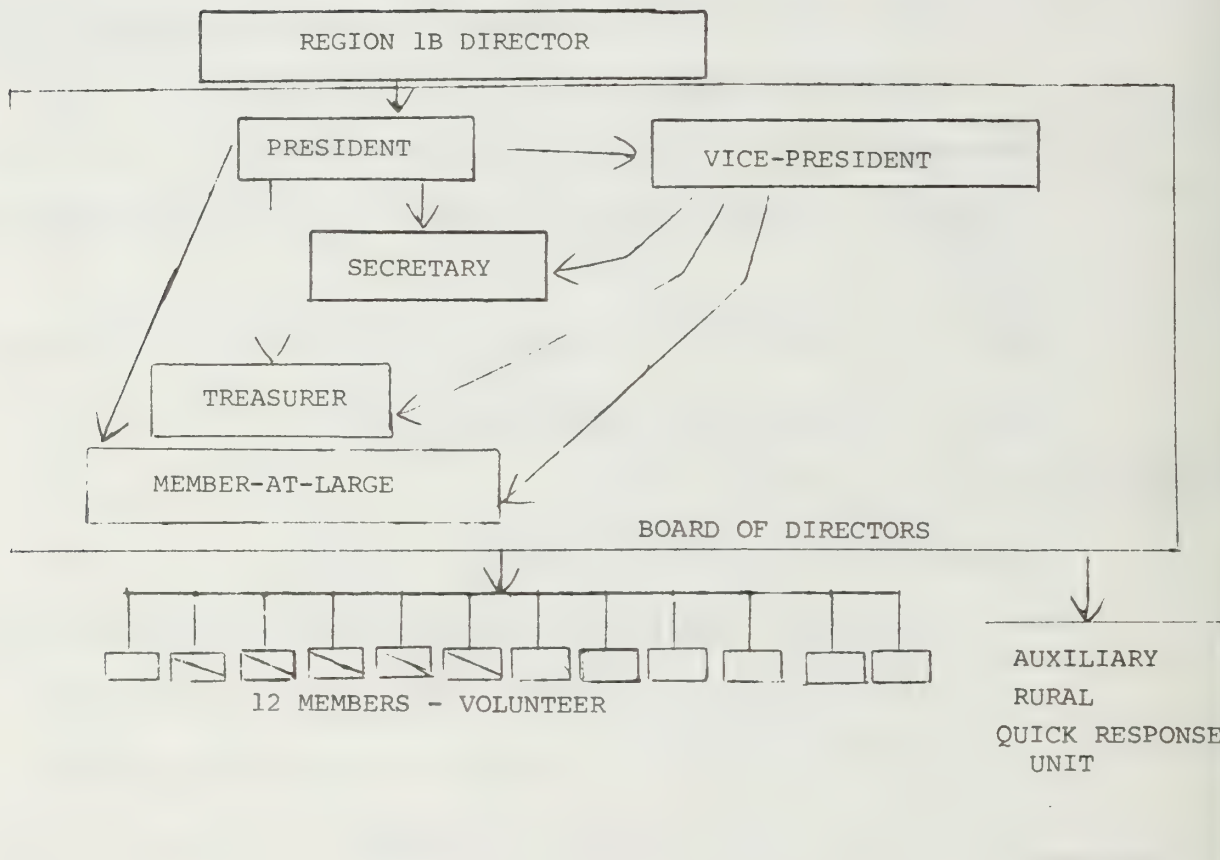
- What establishes the legal mandate to provide the service? Does it clearly define the client system and geographic jurisdiction? Emergency Medical Services Systems
U.S. Dept. Health, Education & Welfare.
Mutual aid agreements with Lima/Wisdom Unit-Ruby Valley Unit (Madison Valley)
No clearly defined geographical jurisdiction available.

- How is the quality of service measured to insure compliance with legal mandate? Regional Director

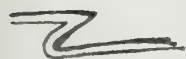
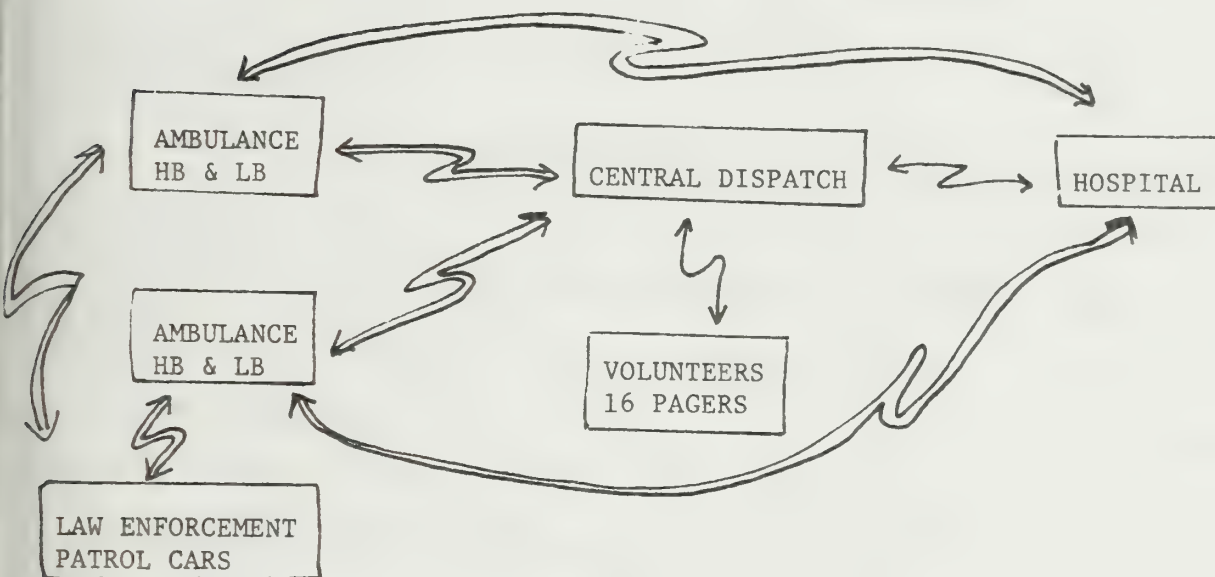
- Is an annual report available for the department or agency?

☐ Yes ☐ No N/A

BEAVERHEAD COUNTY EMERGENCY MEDICAL SERVICES
ORGANIZATIONAL STRUCTURE



BEAVERHEAD COUNTY EMERGENCY MEDICAL SERVICES
COMMUNICATION SYSTEM



RADIO ONLY



TELEPHONE ONLY



RADIO AND TELEPHONE

What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages SEPT-DEC 1980	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)
KLV 872	54	/	/
WCU 966	17		

What is the volume of phone calls? (Enter below)

Telephone Number	Total Number of Calls SEPT -DEC 1980		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
	58	0		
Length of Busy Period (Hours) Time and Date of Monitoring				

What percent of your service/complaint requests are received via:

Telephone 44% (58)

Radio 54% (71)

Other 2% (3)

(131)

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

GENERAL INFORMATION

Agency Volunteer Fire Department

Agency function (i.e. law enforcement, . . .) fight fires

Address Mike Swetish, Fire Chief
528 E. Poindexter, Dillon, Mt. 59725

Telephone 683-2311

Manager/Communications _____

Unofficial Communications Engineer/Planner/Technician H. Lake of
Beaverhead Electronics

Other key personnel:

LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch.

ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

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2. Demographic data of the defined system. Review of this data is intended to include but not be limited by the questions set forth on Form 4N.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

o COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? Residents of Beaverhead County fire districts

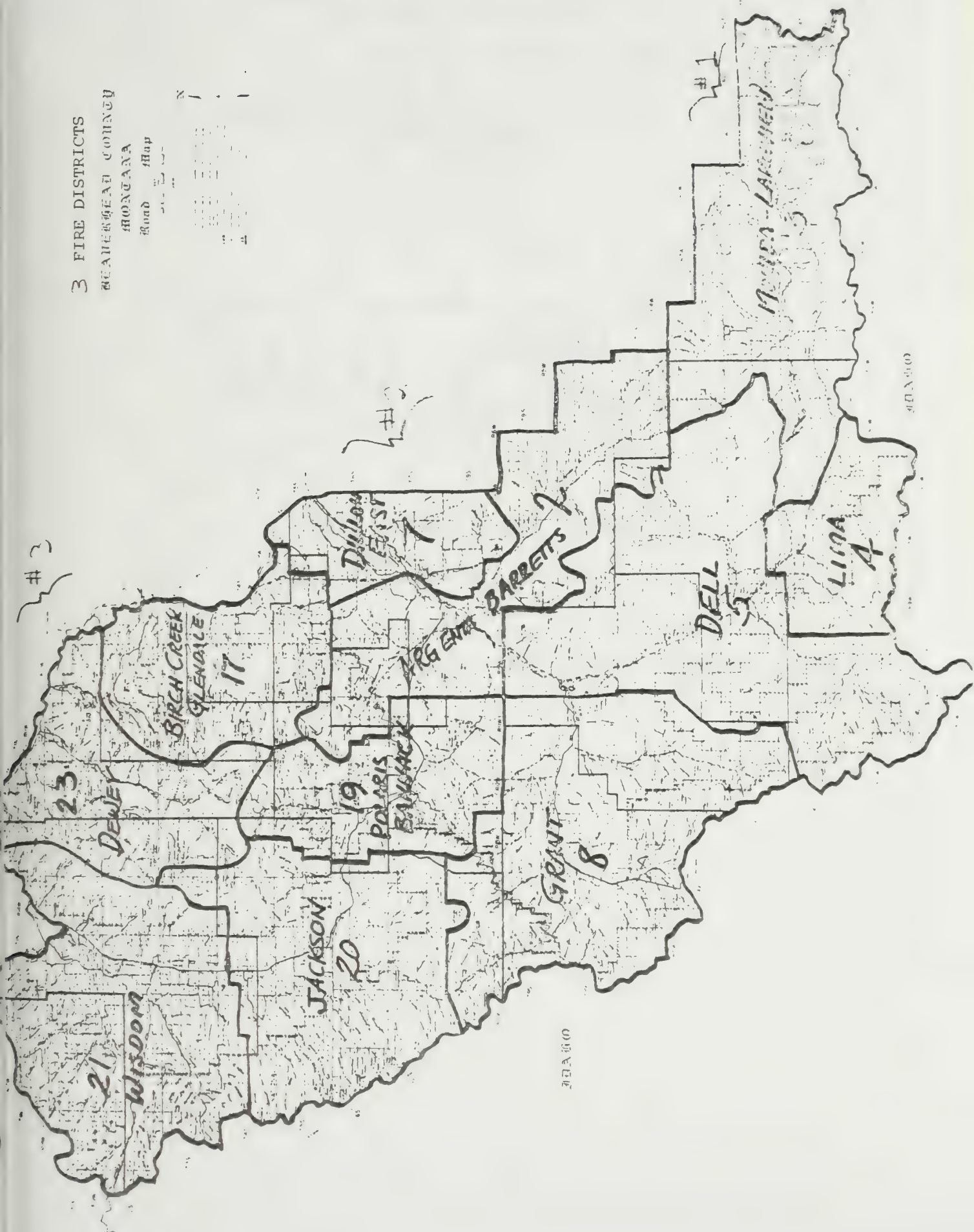
- What establishes the legal mandate to provide the service? Does it clearly define the client system and geographic jurisdiction? Montana Codes Annotated 1979

- How is the quality of service measured to insure compliance with legal mandate? Monthly reports to State Fire Marshall

- Is an annual report available for the department or agency?
☒ Yes ☐ No Monthly

3 FIRE DISTRICTS
BEAUREGARD COUNTY
MISSISSIPPI

Map



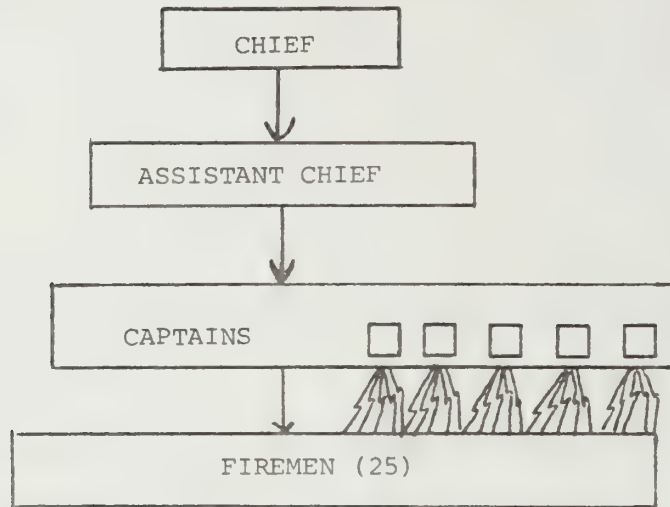
BEAVERHEAD COUNTY VOLUNTEER FIRE DEPARTMENT #2
ORGANIZATIONAL STRUCTURE

42

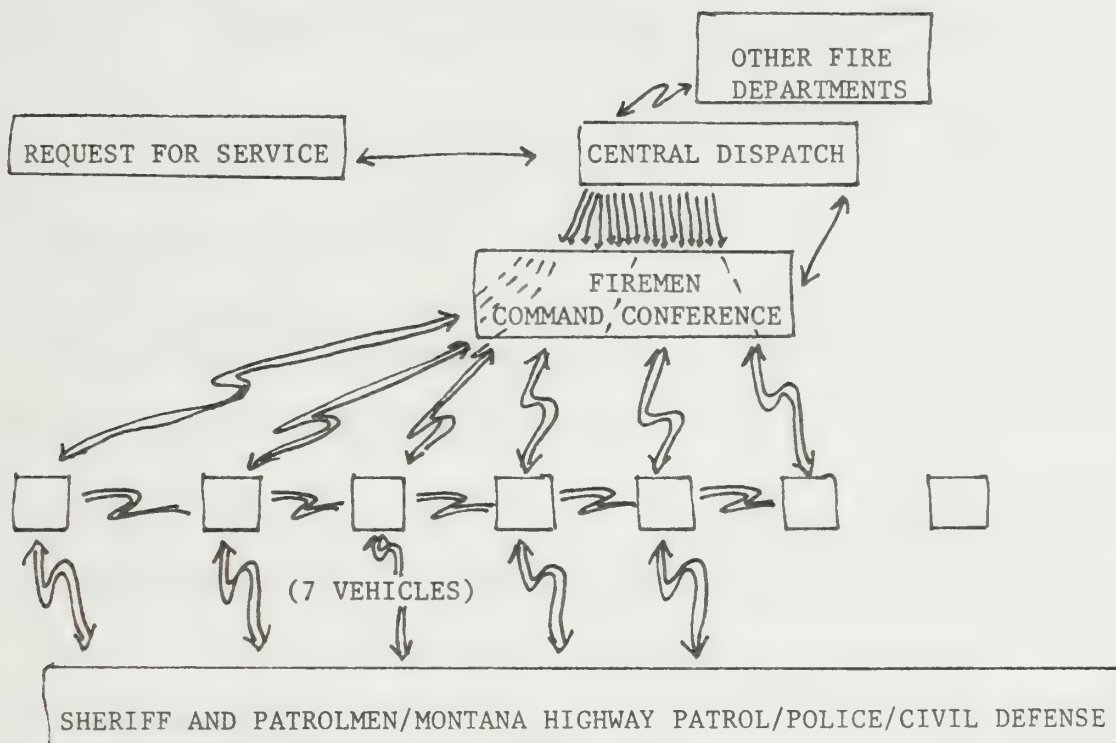
FORM 2N

3 BEAVERHEAD COUNTY UNITS #1 LIMA
#2 DILLON
#3 JACKSON/WISDOM

#2 District:



BEAVERHEAD COUNTY VOLUNTEER FIRE DEPARTMENT COMMUNICATION SYSTEM



FIRE DEPARTMENT

What is the volume of phone calls? (Enter below)

Telephone Number	Total Number of Calls SEPT-DEC 1980		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
	30	0		
Length of Busy Period (Hours) _____ Time and Date of Monitoring _____				

What percent of your service/complaint requests are received via:

Telephone _____ 88% _____ (30)
Radio _____ 0 _____ (0)
Walk-in _____ 12% _____ (4)
_____ (34)

VOLUNTEER FIRE DEPARTMENT DISTRICT #2
PROBLEM REVIEW AND SUMMARY

Potential Problem Areas

1. Coordination and interface with others: There are three (3) clear fire district boundaries in Beaverhead County, but in actuality some overlap occurs because of factors such as terrain, proximity & equipment.

DISTRICT #2 occasionally answers calls from neighboring Madison County residents.

Cooperation and coordination with other agencies is very satisfactory and done verbally on an informal basis.

2. Preparedness for Emergencies:

All firemen are on the Command Conference telephone system. Were this to fail each fireman would have to be called individually, thus taking much more time and tying up dispatches. Thus far this has never happened.

3. Radio Coverage and Interference

District #2 has seven (7) trucks available. Five of these are equipped with both highband and lowband radios. Two have only lowband and await installation of (available) highband equipment. They can communicate with nearly everyone in the county directly from the vehicles.

As always, skip is a big problem with lowband.

4. Cost of Present Operations:

City pays half and fire district mil + $\frac{1}{2}$ levy pays half = \$60 month

CHIEF SWETISH FINDS THE CURRENT COMMUNICATIONS SYSTEM VERY SATISFACTORY. THEY HAVE NO PLANS OR RECOMMENDATIONS FOR CHANGES.

II. G. ROGER JOHNSON,
DIRECTOR

LAND/MOBILE

NEEDS ASSESSMENT METHODOLOGY:

PHASE II

o GENERAL INFORMATION

Agency Civil Defense

Agency function (i.e. law enforcement, . . .) To aid in the coordination
county efforts in case of civil defense emergency situations.

Address Beaverhead County Courthouse; Dillon, Mt. 59725

Telephone 683-5321

Manager/Communications N/A

Unofficial Communications Engineer/Planner/Technician H. Lake of

Beaverhead Electronics

Other key personnel:

o LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch. Beaverhead County, p. 6.

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

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COMMUNICATION SYSTEM FUNCTIONS (P3.0)

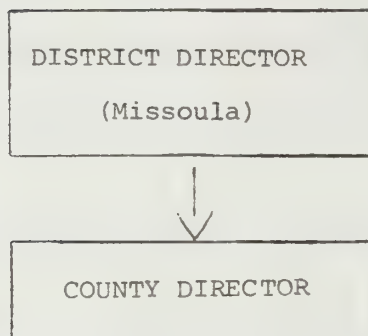
1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? (1) Residents of Beaverhead County (2) Adjacent county residents.
- What establishes the legal mandate to provide the service? Does it clearly define the client system and geographic jurisdiction? Montana Codes Annotated 1979
Yes
- How is the quality of service measured to insure compliance with legal mandate? District Director
- Is an annual report available for the department or agency?

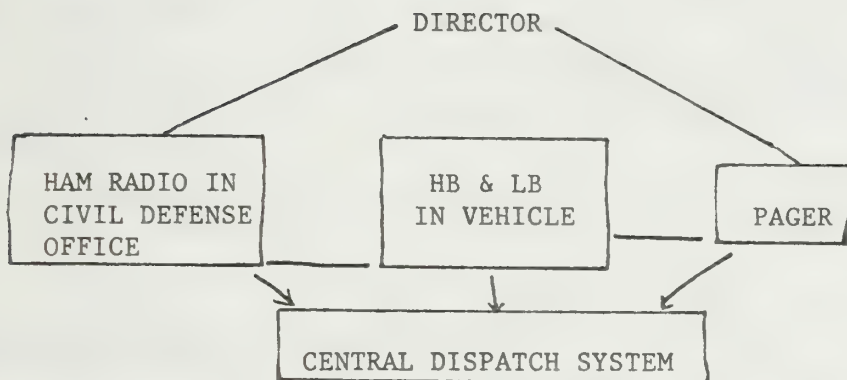
☒ Yes ☐ No
Monthly

Monthly report to: District Director Bill Thomas
Box 9111
Missoula, MT 59801
phone: 406-243-4152

BEAVERHEAD COUNTY CIVIL DEFENSE
ORGANIZATIONAL STRUCTURE



BEAVERHEAD COUNTY CIVIL DEFENSE
COMMUNICATION SYSTEM



Communicates through Central Dispatch with: Helena offices/Hospital/
Mayor/County Commissioner/Sheriff/Search and Rescue/Fire/Ambulance/
Ham Operators/Lima Dam Supervisor/Rest Homes/Police/Montana Highway Patrol/
Emergency Medical Services

LAND/MOBILE
NEEDS ASSESSMENT METHODOLOGY:
PHASE II

o GENERAL INFORMATIONAgency Mayor of DillonAgency function (i.e. law enforcement, . . .) Executive Branch
of city governmentAddress 125 No. Idaho Dillon, Mt. 59725Telephone 683-4245Manager/Communications NoneCommunications Engineer/Planner/Technician None

Other key personnel:

o LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch. City of Dillon

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

- Governmental Entity Organization Structure (Form 1N)
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- Special Interagency Relationships (Form 3N)

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

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NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? Residents of the city of Dillon

- What establishes the legal mandate to provide the service? Does it clearly define the client system and geographic jurisdiction? City Charter and Montana Codes
Yes

- How is the quality of service measured to insure compliance with legal mandate? Elected official - no measurement other than elections.

- Is an annual report available for the department or agency?
☒ Yes ☐ No

CITY OF DILLON
GOVERNMENTAL ENTITY ORGANIZATION STRUCTURE

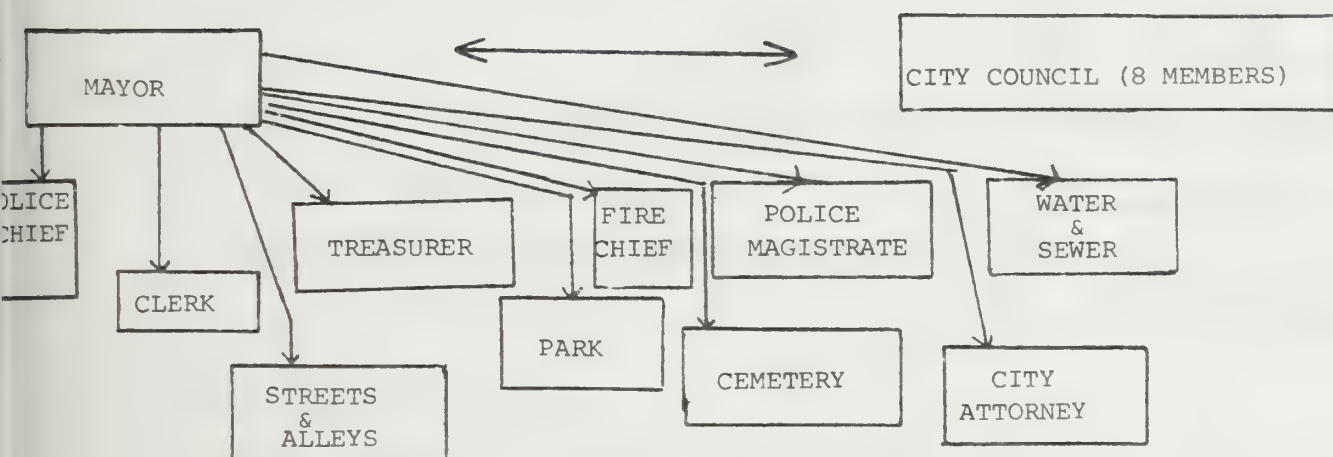
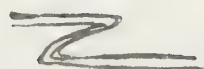
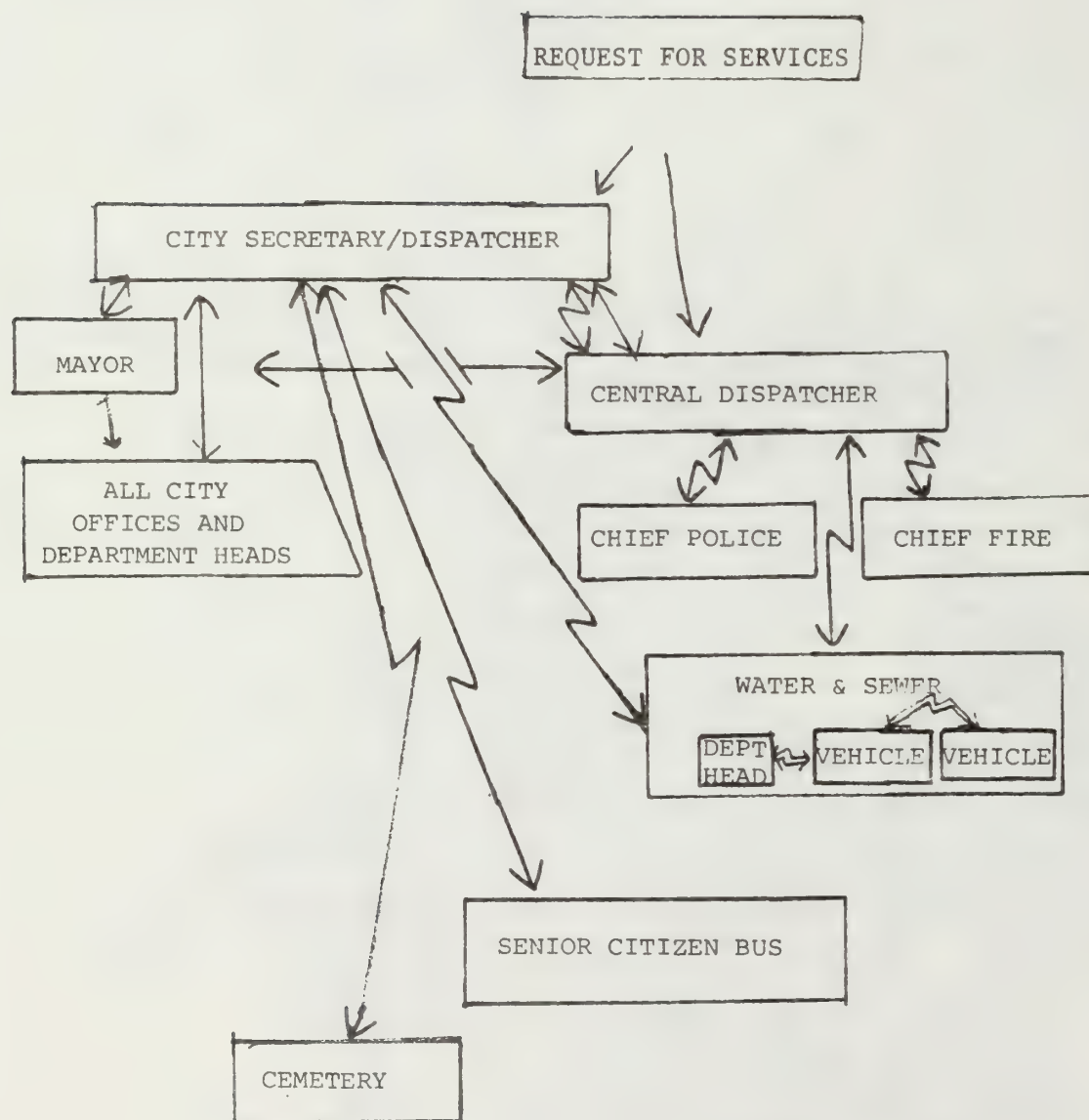


Chart designed from information available in Montana Codes
Annotated 1979.

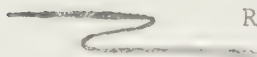
MAYOR/CITY OFFICES COMMUNICATION SYSTEM



RADIO ONLY



TELEPHONE ONLY



RADIO AND TELEPHONE

FORM 4N

SYSTEM DEMOGRAPHIC DATA

In order to effectively develop a system which will serve not only the needs of today but also the needs of the future it is necessary to have a good estimate of the environment in which the agency will operate for the next 5-10 years. Below are listed some categories of change which are important. Please comment on them.

o Population Trends

Steady-increase-decrease? How much? Shifts within area? Expect a
small growth due to stable economic base (agriculture). Slight trend to
moving outside city limits.

o Area Growth

Will present political boundaries change to include more area? Which way
will they go? (Include "future" map, if possible.) Plans and proposals
include annexing the Thompson-Barnett area; the Erb area.

o Tax Bases & Budgets

1. What significant changes might occur in the tax base? Slight increase
due to annexations, especially if a shopping center is built.

2. Will operating budgets be affected? How? Currently taxing at
maximum mill levy and are in good financial condition

o Economic Class Proportions of Population

As population grows will low - middle - high income groups change in terms
of % of total population? Very little

If so, how? Perhaps more middle income groups due to workers from oil
and iron ore exploration and speculations

o Political Trends

Will form of government change? No foreseeable changes

FORM 6N

TELEPHONE ACCESS SYSTEM DATA

o Name of telephone service provider (i.e., common carrier - Bell, GTE, . . .)

Mountain Bell

o Does department have separate emergency and administrative phone numbers?

☐ Yes ☒ No1. If no, how many incoming lines are there? Four (4)2. If yes, how many incoming lines are there for: Emergency _____
Administration _____3. Does the department utilize 911? ____ Yes ☒ No

If yes, explain: _____

4. How many unlisted number lines does the department have for its own
business? None5. Are telephone lines recorded? Yes ☐ No ☒

o What is the volume of phone calls? (Enter below.) No records kept

Telephone Number	Total Number of Calls Past Year		Total Number of Calls During Monitored Period 8 a.m.-5 p.m. Mon-Fri	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
T. 1	No record		214	131
T. 2	No idea		0	5

Length of Busy Period (Hours) 9 hrs./day
Time and Date of Monitoring 2/26/81-3/10/81

NOTE: See Appendices I, II, and III if telephone volume data is not available and must be collected.

RM 6N (Continued)

What percent of the time are all lines busy? (If possible, obtain from telephone company percent of calls which received a busy signal.) No Record.
Clerk says they have never been all busy at one time.
What are the costs? (Enter below.)

No record

Type of Line	Installation	Monthly
Emergency		
Administrative		

Is there any backup telephone equipment? Yes ☐ No ☒

If yes, describe backup. _____

Do the operators handle telephone calls for other services (e.g., fire, public works)? Yes ☒ No ☐

If yes, which services? Employees of City of Dillon: Mayor; Engineer; Water and Sewer Dept.; Senior Citizen Bus; Streets and alleys; Clerk; cemetery; parks; Treasurer; City Council; (non-emergency personnel).

SERVICE/COMPLAINT SYSTEM DATA

0 User Access

1. In the department, who answers initial service : complaint calls
(i.e., secretary, clerk, switchboard operator, dispatcher, . . .)?
Secretary/clerk
2. What percent are received via telephone 95%, radio _____, and
walk-in 5%? (purely guesswork: no records are kept)
3. Number of complaint positions (total). One (1)
4. What is the position-manning schedule? 8AM - 5PM M thru F
5. Describe capabilities provided at each position?
 - Position No. 1 _____
 - Position No. 2 _____
6. Does the complaint taker maintain some type of status system (i.e.,
board, file, . . .)? Yes X No Explain: _____
7. What special emergency procedures are set-up for the service/complaint
room? Mayor is located in adjoining office
8. Describe any other activity in the service/complaint room besides the
taking of service requests or complaints. Secretarial, dispatch
9. How do messages get from the call taker to the dispatcher? _____
Same person

FORM 8N

DISPATCH SYSTEM DATADispatch Facilities Data

1. Number and location of dispatcher positions? 2 dispatch positions

<u>1. City Offices</u>	<u>2. Central Dispatcher (see Central Dispatch System data)</u>
------------------------	---
2. What is the dispatch position manning schedule? 8AM - 5PM
Monday thru Friday year round except legal holidays
3. Describe capabilities provided at each position.
 - Position No. 1 _____
 - Position No. 2 _____
 - Position No. 3 _____
4. Does the dispatcher have supervisory control over remote transmit locations? ☐ Yes ☐ No
5. Does the dispatcher switch these locations in and out, or are they connected at all times? _____
6. Are radio channels recorded? ☐ Yes ☒ No

Resource Control Data

1. Who selects service response? Secretary/dispatcher
2. Who services or prepares complaint form? no forms used
3. Who marks service unit back in service? secretary/dispatcher

4. How many status levels (i.e., available, enroute, on assignment, out of service, . . .) are there for field personnel? None
5. What are they? _____
6. Are any levels of status of low priority so that a man assigned to a lower level complaint can be reassigned to a higher level complaint?
Yes ☒ No ☐
7. Describe the status level priorities and who decides to reassign a man. Emergency level has high priority. Mayor or supervisor decides assignments.
8. Are there any priorities assigned to complaint assignments (e.g., immediate dispatch, delayed dispatch). Yes ☐ No ☒
9. If yes, describe the priorities and how the priority of a complaint is determined, and then communicated to service providers. Mayor or department supervisors determine assignments

o Dispatch Volume Data

1. What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages Past Year	Total Number of Messages During Monitored Period 8AM-5PM Mon-Fri	Average Radio System Delay During Busy Period (seconds)
1	No Record	7	No Record
2	" "	16	" "
4	" "	166	" "

Length of Busy Period (hours) 9 hrs/wk day

Time and Date of Monitoring 2/26/81 - 3/11/81

NOTE: See Appendices I, III, and IV if radio volume and message length data is not available.

2. What was the average message length N/A seconds?
3. Does the dispatcher handle radio messages for other services (e.g., fire, public works)? ☒ Yes ☐ No
4. If yes, which services? Non-emergency city services
5. Other data: _____

What volume for: personal uses? N/A

" " " repeats? N/A

" " " abuses? N/A

FORM 10N

MAINTENANCE SYSTEM DATAo Maintenance ServiceDoes agency have own maintenance service organization? ☐ Yes ☒ Noo Self-Servicing Agency

1. Number of technicians _____

2. Location of service facility(s) _____

_____3. Are there any current plans for service-shop changes? _____

4. Other data: _____

o Contract or Other Service

1. Who is the servicing agency (company, other agency, etc.)? _____

Beaverhead Electronics

2. Where are they located? 365 No. Parkview - Dillon, Mt.

3. Number of technicians? 2 available on part-time basis

4. Must mobiles go to shop for service? ☐ Yes ☒ No Depends on service needs5. Other data: Maintenance is done on a case by case basis.

6. Average length stay in shop? N/A

7. Yearly expenditure on maintenance? Including teletype - FY79-80 \$684.00
- \$2000.00 New purchases8. Design system recommendation? _____
They would like more mobile radio units but are basically very
satisfied with existing system.

POTENTIAL PROBLEM AREAS

Coordination and interface with others:

Montana Highway Patrol uses the City/County Central Dispatch System and should contribute financially to the system.

Everyday, non-emergency communications concerning city officials by-pass the Central Dispatch and go directly to the city secretary/clerk.

The city of Dillon and county of Beaverhead maintain verbal, informal agreements to share services when requested. This includes personnel and equipment. The overall consensus regarding this arrangement is that it is very satisfactory.

Preparedness for Emergencies:

See same under Sheriff - Beaverhead County.

F.C.C. Compliance:

No problems.

Cost of Present Operations:

City pays approximately \$640 per year for teletype and communications equipment maintenance.

Cost of Central Dispatch system in FY80-81 is \$67,592.76. The city pays for one-half ($\frac{1}{2}$) of this and the county pays one-half ($\frac{1}{2}$).
FY80-81 = \$33,796.38

Projected Expenditures

No projected changes in expenditures

NEEDS ASSESSMENT METHODOLOGY:

PHASE II

o GENERAL INFORMATIONAgency DILLON POLICE DEPT.Agency function (i.e. law enforcement, . . .) Law enforcementAddress Beaverhead County Courthouse, Dillon, Mt. 59725Telephone 683-2333Manager/Communications N/AUnofficial Communications Engineer/Planner/Technician H. Lake of BeaverheadElectronics

Other key personnel:

o LAND/MOBILE SYSTEM IDENTIFICATION (P1.0)

1. Land/mobile physical inventory complete? ☐ Yes ☒ No
2. If yes, review and attach.
3. If no, geographically define the system service area (i.e. city, county, district, . . .) and attach sketch. City of Dillon, p. 52

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA (P2.0)

1. Organizational structure of the defined system (i.e. city, county, district, . . .) on the following forms:

- Governmental Entity Organization Structure (Form 1N)
- Agency/Department Management Structure (Form 2N)
- Special Interagency Relationships (Form 3N)

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

2. Demographic data of the defined system. Review of this data is intended to include but not be limited by the questions set forth on Form 4N.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

o COMMUNICATION SYSTEM FUNCTIONS (P3.0)

1. Communication needs to be served.

- Who are the primary and secondary clients of the defined system? Residents of and visitors to the city of Dillon

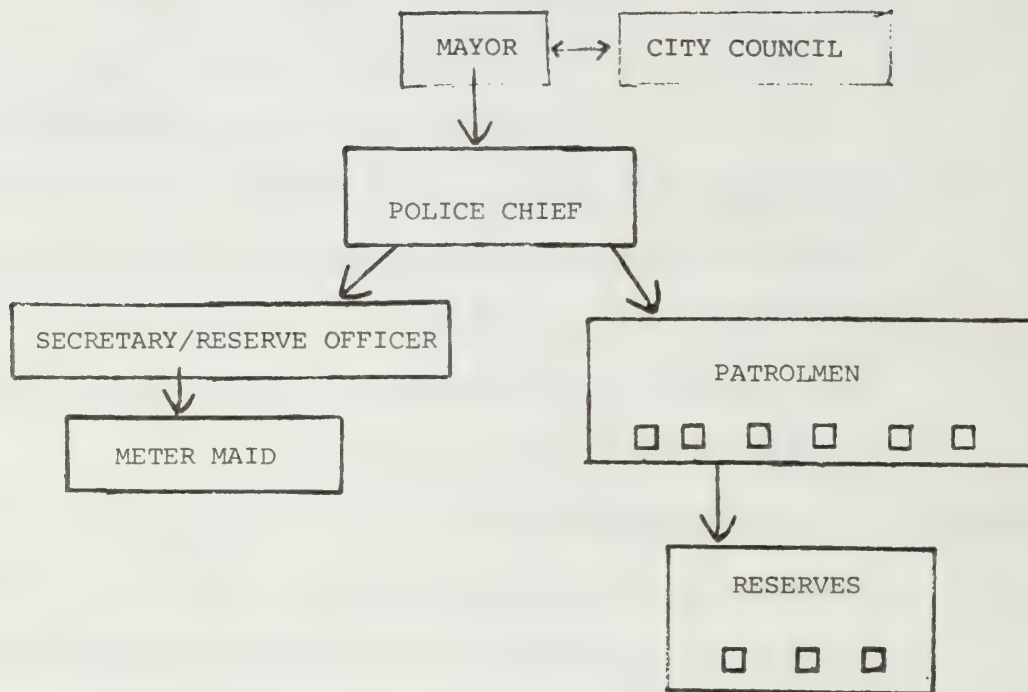
- What establishes the legal mandate to provide the service?
Does it clearly define the client system and geographic jurisdiction? Montana Codes Annotated 1979

- How is the quality of service measured to insure compliance with legal mandate? Police Chief monitors personnel.

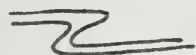
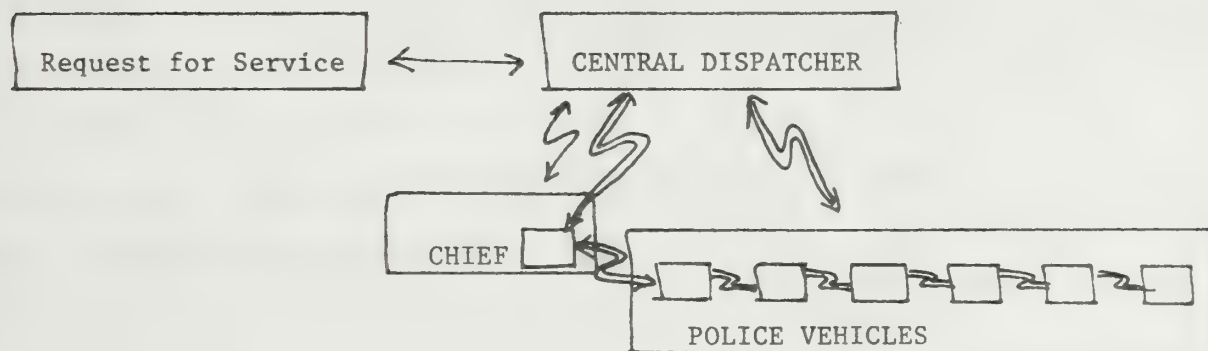
- Is an annual report available for the department or agency?
☒ Yes ☐ No Yearly statistical report
Monthly report of activities

DILLON POLICE DEPARTMENT
ORGANIZATION STRUCTURE

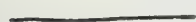
FORM 2N



DILLON POLICE DEPARTMENT
COMMUNICATION SYSTEM



RADIO ONLY



TELEPHONE ONLY



RADIO AND TELEPHONE

Each officer also has a portable 2-way radio for use when out of the vehicle.

SERVICE/COMPLAINT SYSTEM DATA

0 User Access

1. In the department, who answers initial service or complaint calls
(i.e., secretary, clerk, switchboard operator, dispatcher, . . .)?
Central dispatcher → Secretary (reserve officer) for non-emergency matters
2. What percent are received via telephone 100, radio _____, and
walk-in _____?
3. Number of complaint positions (total). One (1)
4. What is the position-manning schedule? 8AM-5PM/MONDAY-FRIDAY
for Secretary. Continuous manning at Central Dispatch Center.
5. Describe capabilities provided at each position?
 - Position No. 1 _____
 - Position No. 2 _____
6. Does the complaint taker maintain some type of status system (i.e.,
board, file, . . .)? Yes X No Explain: _____
7. What special emergency procedures are set-up for the service/complaint
room? see Central Dispatch information, p. 11
8. Describe any other activity in the service/complaint room besides the
taking of service requests or complaints. Routine secretarial work
9. How do messages get from the call taker to the dispatcher? _____
Telephone back to dispatcher

What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages Sept-Dec 1980	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)
KXK 427	1633	72	
		Length of Busy Period (Hours) <u>5 hrs/day</u> Time and Date of Monitoring <u>8/25-9/7/80</u> <u>9 PM-2 AM</u>	

What is the volume of phone calls? (Enter below)

Telephone Number	Total Number of Calls Sept-Dec 1980		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
	843	707	30	0
	Length of Busy Period (Hrs) <u>5 hrs/day</u> Time and Date of Monitoring <u>8/25-9/7/80</u> <u>9 PM-2 AM</u>			

What percent of your service/complaint requests are received via:

Telephone	<u>44%</u>	<u>(1550)</u>
Radio	<u>47%</u>	<u>(1633)</u>
Walk-in	<u>9%</u>	<u>(316)</u>
		<u>(3499)</u>

Terminal Volume Data

For each data file what was the volume of information requests, entered messages, cancelled messages during past year? (Enter below)

Computer System	Number of Information Requests	Number of Messages Entered	Number of Messages Cancelled	Number of Miscellaneous Uses (specify what)

(see App. E (E-6)

FORM 10N

MAINTENANCE SYSTEM DATAo Maintenance ServiceDoes agency have own maintenance service organization? ☐ Yes ☒ Noo Self-Servicing Agency

1. Number of technicians _____

2. Location of service facility(s) _____

_____3. Are there any current plans for service-shop changes? _____

4. Other data: _____

o Contract or Other Service

1. Who is the servicing agency (company, other agency, etc.)? _____

Beaverhead Electronics

2. Where are they located? 365 No. Parkview

Dillon, Mt.

3. Number of technicians? 2 part-time

4. Must mobiles go to shop for service? ☐ Yes ☒ No Depends on
needed

5. Other data: Repairs are done on a case by case basis.

6. Average length stay in shop? variable

7. Yearly expenditure on maintenance? July 1, 1980 till Feb. 24, 1981
they spent \$191.98 on maintenance.8. Design system recommendations: Very satisfied with system. Would
like 911 telephone system NOW.

III. ASSESSMENT AND CRITIQUE

A. INTERVIEWS ORDER

Preliminary contact with the mayor and one county commissioner should be established several weeks in advance of the actual visit to the area; the scope and purpose of the Needs Assessment should be explained and the receptiveness of the officials can be determined. At that time it can be learned if the city or county utilizes a centralized dispatch system (CDS).

If a CDS exists, a telephone conference with a dispatcher will yield names of all users of the system, and interviews can be arranged with no oversights. If no CDS exists, the following agencies or departments are probably land/mobile radio system users:

County Commissioners/Sheriff/Road Crews/Search and Rescue/Ski Patrol/Fire Department/Emergency Medical Services/Civil Defense/Mayor/Police/Water and Sewers/Streets and Alleys/Montana Highway Patrol/Fish and Game/Forest Service/Stock and Brand Inspector/Veterinarians.

An initial meeting with a county commissioner should facilitate the entry into other county offices. The organizational structure of the county, including all land/mobile radio system users, can be obtained from the commissioner, as well as information on budgetary matters. A broad overview of county government, together with inter-agency relationships and division or sharing of equipment and responsibilities can be assessed at the beginning of the project. Questions on fiscal matters which might necessitate some research can be initiated early, giving personnel ample time to find accurate answers.

In the same way, an early meeting with the mayor facilitates entry into the city government.

Next, and likely to be most valuable in terms of information, are the Sheriff's Department and the Police Department. These are probably the primary users of a land/mobile radio system and are most likely to keep a written log of communications. Their departments interact with, and perhaps supervise, other users.

Other agency and department interviews can be scheduled in any convenient order. Each interview with a county commissioner, the mayor, and primary users (i.e., sheriff and police), lasted three to four hours. Each interview with secondary users will probably require from one to one and one-half hours.

Interview:

Preliminary telephone call
County Commissioner/Mayor

County Commissioner/Mayor

Sheriff/Police

Remaining agencies

III. B. SUGGESTED REVISIONS FOR LAND/MOBILE NEEDS ASSESSMENT METHODOLOGY

The existing methodology contains needless descriptive text and examples. To understand the interview project and its goals, text and examples are certainly necessary, but I suggest that a separate training packet be designed for that purpose. The current interview packet includes many pages which must be ignored during the interview; this increases the likelihood of overlooking necessary questions.

I suggest two revised methodologies, each designed to improve the flow of the interview as well as to minimize the risk of omitting questions. In both revised methodologies I have deleted repetitious material and consolidated or clarified questions and forms.

- The first revision (i) is for those areas or agencies who are not serviced by a central dispatch system; the second
- (ii) is for those areas and agencies who are serviced by a central dispatch system.

LAND/MOBILE RADIO SYSTEM
NEEDS ASSESSMENT METHODOLOGY

METHODOLOGY FOR AGENCIES NOT SERVED BY A CENTRAL DISPATCH SYSTEM

The following information should be obtained from the County Commissioner and the Mayor:

(Much of the geographical and demographic material can be gathered before the visit at the Department of Community Affairs or the State Library, in Helena. Information thus gathered should be verified and supplemented during the personal interview with the officials.)

Address: _____

Telephone: _____

box
task
ted)

☐ Organizational structure of the local government (attach sketch and include ALL appropriate land/mobile radio system users)

☐ Special interagency relationships (attach sketch).

Will form of government change? How?

☐ Maps of the city and the county, with changes and proposed changes noted.

Population Trends

Steady-increase-decrease? How much? Shifts within areas? _____

Tax Bases & Budgets

What significant changes might occur in the tax base? _____

Will operating budgets be affected: How? _____

Economic Class Proportions of Population

As population grows will low - middle - high income groups in terms of % of total population?

If so, how? _____

Is there a seasonal fluctuation in population? _____

☐ How are the agencies (land/mobile radio system users) funded? (give details and actual \$\$ figures for each agency).

☐ What is the telecommunications budget? (give details and actual figures for each agency). Use chart on page 75 (or p. 88 for Revision ii)

Name of telephone service provider. _____

☐ Will city/county contact the telephone company and request a 30 day monitoring of each agency line to determine (1) percent of calls which receive a busy signal (2) percent of time all lines are busy?

AL YEAR	AGENCY Install- ation	Monthly	AGENCY Install- ation	Monthly	AGENCY Install- ation	Monthly	AGENCY Install- ation	Monthly	AGENCY Install- ation	Monthly
EPHONE LINES:										
AGENCY										
ADMINISTRATIVE										
EPHONE LINES:										
AGENCY										
ADMINISTRATIVE										
MOBILE RADIO SYSTEM										
MOBILE RADIO SYSTEM										

7.1 TELECOMMUNICATIONS BUDGET
FOR FY

CITY COUNTY

LAND/MOBILE RADIO SYSTEM
NEEDS ASSESSMENT METHODOLOGY

(i) METHODOLOGY FOR AGENCIES NOT SERVED BY CENTRAL DISPATCH SYSTEMS

Agency name _____

Agency function _____

Supervisor _____

Address of
Agency _____

Respondent _____

Telephone(s) _____

Manager/Communications _____

Communications Engineer/Planner _____

Other key personnel _____

Land/Mobile System Identification

1. Is the land/mobile physical inventory completed?

Yes ☐ (Review & attach) No ☐ (Geographically define & attach sketch)

☐ Verify or obtain agency management or organizational structure.

☐ Verify or obtain special interagency relationships.

Communication System Functions

2. Is the agency established under authority of Montana Codes?

Yes ☐ No ☐
What establishes the legal mandate to provide the service? Does it clearly define the client system and geographical jurisdiction?

3. Who are the primary and secondary clients of the defined system? _____

4. How is the quality of service measured to insure compliance with legal mandate?

5. Is an annual report available for the department or agency?

Yes ☐

No ☐

6. Address of source: _____

7. What communication systems are presently used by the agency? (Attach diagram of communication paths and equipment used for each path.)

Projected expenditures and new purchases.

8. Do you foresee any changes in your telecommunications operating budget and expenditures?

Yes ☐ (describe)

No ☐

Service/Complaint System Data

9. Does the agency have a designated communication center in the defined area for receipt of complaints and dispatch or coordination of resources?

Yes ☐

No ☐

How many? _____

10. In the department, who answers initial service or complaint calls (i.e., secretary, clerk, switchboard operator, dispatcher, . . .)?

11. What percent are received via telephone_____, radio_____, and walk-in_____?
12. Number of complaint positions (total)._____
13. What is the position-manning schedule?_____

14. Does the complaint taker maintain some type of status system (i.e., board, file, . . .)? Yes ☐ No ☐ Explain:_____

15. What special emergency procedures are set-up for the service/complaint room?_____

16. Describe any other activity in the service/complaint room besides the taking of service requests or complaints._____

17. How do messages get from the call taker to the dispatcher?_____

Telephone Access System Data

1. Name of telephone service provider(s) (i.e., common carrier - Bell, GTE, . . .)

2. Does department have separate emergency and administrative phone numbers?

Yes ☐

No ☐

a. If no, how many incoming lines are there?

b. If yes, how many incoming lines are there for: Emergency _____

Administration _____

c. Does the department utilize 911? ____ Yes ____ No

If yes, explain: _____

d. How many unlisted number lines does the department have for its own business? _____

e. Are telephone lines recorded? Yes ☐ No ☐

3. What is the volume of phone calls? (enter below)

Telephone Number	Total Number of Calls Past Year		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch
<p>Length of Busy Period (Hours) _____</p> <p>Time and Date of Monitoring _____</p>				

☐ What are the costs? (Confirm or collect figures from chart p. 75)

Example:

Type of Line	Installation	Monthly
Emergency		
Administrative		

21. Is there any backup telephone equipment? Yes ☐ No ☐

If yes, describe backup. _____

22. Do the operators handle telephone calls for other services (e.g., fire, public works)? Yes ☐ No ☐

If yes, which services? _____

Dispatch System Data

23. Number and location of dispatcher positions? _____

24. What is the dispatch position manning schedule? _____

25. Are radio channels recorded? ☐ Yes ☐ No
26. Who selects service response? _____
27. Who services or prepares complaint form? _____
28. Who marks service unit back in service? _____
29. How many status levels (i.e., available, enroute, on assignment, out of service, . . .) are there for field personnel? _____
30. What are they? _____
31. Are any levels of status of low priority so that a man assigned to a lower level complaint can be reassigned to a higher level complaint?
Yes ☐ No ☐
32. Describe the status level priorities and who decides to reassign a man.

33. Are there any priorities assigned to complaint assignments (e.g., immediate dispatch, delayed dispatch). Yes ☐ No ☐
34. If yes, describe the priorities and how the priority of a complaint is determined and then communicated to service providers. _____

Dispatch Volume Data

35. What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages Past Year	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)

Length of Busy Period (hours) _____
Time and Date of Monitoring _____

36. What was the average message length _____ seconds?

37. Does the dispatcher handle radio messages for other services (e.g., fire, public works)? ☐ Yes ☐ NO

38. If yes, which services? _____

39. Other data: _____

40. What volume for: personal uses? _____

41. What volume for: repeats? _____

42. What volume for: abuses? _____

43. Does the agency have a computer or teletype terminal?

☐ Yes

☐ No

44. If the terminal position is not equipped for radio operation how does the radio dispatcher send information requests to the terminal operator and get back the required information? _____

45. If each terminal is not at a dispatcher location, is the terminal location equipped with a control unit so that the terminal operator can communicate with field forces? Yes No

If no, how is the information transferred to the field forces?

Computer System	Number of Information Requests	Number of Messages Entered	Number of Messages Cancelled	Number of Miscellaneous Uses (specify what)

46. Other data: _____

Maintenance Service

47. Does agency have own maintenance service organization? ☐ Yes ☐ No

Self-Servicing Agency

- a. Number of technicians _____
- b. Location of service facilities? _____

- c. Are there any current plans for service-shop changes? _____

- d. Other data: _____

Contract or Other Service

- e. Who is the servicing agency (company, other agency, etc.)? _____

- f. Where are they located? _____

- g. Number of technicians? _____
- h. Must mobiles go to shop for service? ☐ Yes ☐ No
- i. Other data: _____

48. Average length stay in shop? _____

49. Design system recommendations: _____

50. Coordination and interface with others _____

Preparedness for Emergencies (record on reverse side).

- ☐ A. What can cause a major element of the system to fail?
- ☐ B. How likely is each possible cause of failure?
- ☐ C. Is it likely that an element and its back-up will fail at the same time, for the same reason?
- ☐ D. Is the cause that produces a failure likely to create also an unusually heavy demand for services?
- ☐ E. Can the primary back-up provide an adequate level of service in most situations?
- ☐ F. If the primary back-up fails, will the secondary back-up (if there is one) be able to maintain an adequate level of service?
- ☐ G. How quickly can the back-up facility be put into operation?
- ☐ H. Is maintenance service provided on a 24-hour per day, 7-day per week basis to ensure continuous system operation?
- ☐ J. Are communication equipment and personnel well protected against damage and interference with their duties?

LAND/MOBILE RADIO SYSTEM

NEEDS ASSESSMENT METHODOLOGY

METHODOLOGY FOR AGENCIES SERVED BY A CENTRAL DISPATCH SYSTEM

The following information should be obtained from the County Commissioner and the Mayor:

(Much of the geographical and demographic material can be gathered before the visit at the Department of Community Affairs or the State Library, in Helena. Information thus gathered should be verified and supplemented during the personal interview with the officials).

Address: _____

Telephone: _____

Check box
when task
completed)

☐ Organizational structure of the local government (attach sketch and include ALL appropriate land/mobile radio system users)

☐ Special interagency relationships (attach sketch).

Will form of government change? How?

☐ Maps of the city and the county, with changes and proposed changes noted.

Population Trends

Steady-increase-decrease? How much? Shifts within areas? _____

Tax Bases & Budgets

What significant changes might occur in the tax base? _____

Will operating budgets be affected: How? _____

Economic Class Proportions of Population

As population grows will low - middle - high income groups in terms of % of total population?

If so, how? _____

Is there a seasonal fluctuation in population? _____

☐ How are the agencies (land/mobile radio system users) funded? (give details and actual \$\$ figures for each agency).

☐ What is the telecommunications budget? (give details and actual figures for each agency). Use chart on page 88.

Name of telephone service provider. _____

☐ Will city/county contact the telephone company and request a 30 day monitoring of each agency line to determine (1) percent of calls which receive a busy signal (2) percent of time all lines are busy?

FISCAL YEAR	AGENCY		AGENCY		AGENCY		AGENCY		AGENCY		AGENCY	
	Install-	Monthly	Install-	Monthly	Install-	Monthly	Install-	Monthly	Install-	Monthly	Install-	Monthly
PHONE												
TELETYPE												
TELETYPE												
ADMINISTRATIVE												
PHONE												
TELETYPE												
TELETYPE												
ADMINISTRATIVE												
MOBILE												
RADIO												
TELETYPE												
MOBILE												
RADIO												
TELETYPE												

FBI TELECOMMUNICATIONS BUDGET

OR FY

CITY

COUNTY

LAND/MOBILE RADIO SYSTEM NEEDS ASSESSMENT METHODOLOGY
FOR AGENCIES SERVED BY A CENTRAL DISPATCH SYSTEM

The following information should be obtained from the supervisor of the Central Dispatch System.

CENTRAL DISPATCH SYSTEM (CDS) SUPERVISOR

Name _____

Respondent (if different) _____

Agency address _____ Telephone(s) _____

Manager/Communications _____

Communications Engineer/Planner _____

Agencies served by the Central Dispatch System

Is land/mobile physical inventory complete?

Yes ☒ No ☐

Yes ☒ No ☐

Yes ☐ No ☐

Yes | No ☐

Yes ☒ No ☐

Yes ☒ No ☐

Yes : No ☐

Yes ☐ No ☐

Yes ☒ No ☐

Yes ☒ No ☐

Yes ☒ No ☐

Yes ☒ No ☐

Yes | No ☐

Yes No ☐

Yes : No ☐

(Review&Attach) Geographically
define the system
service area(i.e.
city, county, district)

1. What establishes the legal mandate to provide the service? Does it clearly define the client system and geographical jurisdiction? _____

2. How is the quality of service measured to insure compliance with legal mandate? _____

3. Are there problems in complying with F.C.C. regulation? ☐ Yes ☐ No

4. Are there funding restraints which make it difficult to perform necessary communications on a satisfactory level ☐ Yes(describe) ☐ No

5. What communication system functions are used for each agency served? (Attach functional flow charts)

6. Are there instances where better communications could be established by coordinating and sharing equipment with neighboring counties or states? (describe) _____

Telephone System Data

7. Name of telephone service provider _____

8. How many incoming lines are there?

Emergency _____ Administrative _____ Unlisted _____

9. Are telephone lines recorded? ☐ Yes ☐ No

10. Is 911 used? ☐ Yes (list departments and define ☐ No
geographical area served)

11. Has the telephone company been contacted to monitor agency lines?

☐ Yes ☐ No Estimated percent of time agency lines are
all busy _____

12. Is there any back-up telephone equipment? ☐ Yes ☐ No

(Describe) _____

13. How often in the past 10 years has the system failed? _____

14. For what reason(s)? _____

Service/Complaint and Dispatch System Data

15. Who answers the initial service or complaint calls (i.e., secretary, clerk,
switchboard operator, dispatcher, . . .)? _____

16. What percent are received via telephone _____, radio _____, and walk-in _____?

17. Total number of service/complaint positions, and their location _____

18. Total number of dispatcher positions, and their locations _____

19. What is the position manning schedule?

Service/Complaint	Dispatch
_____	_____
_____	_____
_____	_____
_____	_____

20. Does the service/complaint call taker also dispatch?

Yes ☐

No ☐

If no, how does message get from call taker to dispatcher?

21. Who selects the service response? _____

22. Who services or prepares the complaint form? _____

23. Who marks service unit back in service? _____

24. Are radio messages recorded? ☐ Yes (explain) ☐ No

25. Describe any other activities in the service/complaint room beside the taking of service requests or complaints.

26. Describe any other activities in the dispatch room besides the dispatching of messages.

27. Does the complaint taker maintain some type of status system (i.e., board, file, log . . .)? ☐ Yes ☐ No

If yes, explain _____

28. How many status levels (i.e., available, enroute, on assignment, out of service . . .) are there for field personnel? _____

29. What are they? _____

30. Are any levels of status of low priority so that a man assigned to a lower level complaint can be reassigned to a higher level complaint?

☐ Yes ☐ No

31. Describe the status level priorities and who decides to reassign a man.

32. Are there any priorities assigned to complaint assignments (e.g., immediate dispatch, delayed dispatch)? ☐ Yes ☐ No

33. If yes, describe the priorities and how the priority of a complaint is determined and then communicated to service providers.

34. (on following sheet)

Maintenance Service

35. Does agency have own maintenance service organization? ☐ Yes ☐ No

(Self-Servicing Agency)

a. Number of technicians _____

b. Location of service facility(s) _____

[illegible]

c. Are there current plans for service-shop changes? _____

d. Other data _____

(Contract or Other Service)

e. Who is the servicing agency (company, other agency, etc.)? _____

f. Where are they located? _____

g. Number of technicians? _____

h. Must mobiles go to shop for service? ☐ Yes ☐ No

i. Other data _____

36. Average length stay in shop? _____

37. Design system recommendations: _____

38. Preparedness for Emergencies (record on reverse side).

- ☐ A. What can cause a major element of the system to fail?
- ☐ B. How likely is each possible cause of failure?
- ☐ C. Is it likely that an element and its back-up will fail at the same time, for the same reason?
- ☐ D. Is the cause that produces a failure likely to create also an unusually heavy demand for services?
- ☐ E. Can the primary back-up provide an adequate level of service in most situations?
- ☐ F. If the primary back-up fails, will the secondary back-up (if there is one) be able to maintain an adequate level of service?

- ☐ G. How quickly can the back-up facility be put into operation?
- ☐ H. Is maintenance service provided on a 24-hour per day, 7-day per week basis to ensure continuous system operation?
- ☐ I. Are communication equipment and personnel well protected against damage and interference with their duties?

Computer Terminal Facilities Data

39. List below the computer and/or teletypewriter terminals the agency uses. Be sure to indicate if a terminal is shared between two or more networks or information retrieval systems.

40. Who operates the terminals? _____

41. What are the physical locations of the terminals? _____

42. If the terminal position is not equipped for radio operation, how does the radio dispatcher send information requests to the terminal operator and get back the required information?

Resource Control Data

43. If each terminal is not at a dispatcher location, is the terminal location equipped with a control unit so that the terminal operator can communicate with field forces? ☐ Yes ☐ No
44. If no, how is the information transferred to the field forces?

Terminal Volume Data

45. For each data file, what was the volume of information requests, entered messages, cancelled messages during the past year? (Enter below)

Computer System	Number of Information Requests	Number of Messages Entered	Number of Messages Cancelled	Number of Miscellaneous Uses (specify what)

Other data: _____

The following information should be obtained from individual agency or department supervisors:

Verify or obtain:

- ☐ 46. Agency/department management structure
- ☐ 47. Special interagency relationships
- ☐ 48. Communication systems chart
- ☐ 49. Telecommunications budget (give details and figures)
- ☐ 50. Geographical map or definition of service area
- ☐ 51. Volume of telephone and L/M radio traffic

52. Agency Name _____

53. Agency Function _____

54. Agency Address _____

55. Telephone(s) _____

56. Supervisor _____

Respondent (if different) _____

Land/Mobile System Identification

57. Is the land/mobile physical inventory completed?

☐ Yes

(Review and attach)

☐ No

(Geographically define and attach sketch)

Communication System Functions

58. Is the agency established under authority of Montana Codes?

☐ Yes

☐ No

What establishes the legal mandate to provide the service?
Does it clearly define the client system and geographical
jurisdiction?

59. Who are the primary and secondary clients of the defined system?

60. How is the quality of service measured to insure compliance with legal mandate?

61. Is an annual report available for the department or agency?

☐ Yes

☐ No

Address of source

62. Projected expenditures and new purchases

63. Do you foresee any changes in your telecommunications operating budget and expenditures? ☐ Yes ☐ No

Service/Complaint System Data

64. Does the agency have a designated communication center other than central dispatch system for receipt of complaints and dispatch or coordination of resources? ☐ Yes ☐ No
How many? _____ (If no, STOP HERE)
65. In the department, who answers initial service or complaint calls (i.e., secretary, clerk, switchboard operator, dispatcher...)?

66. What percent are received via telephone _____, radio _____, and walk-in _____?
67. Number of complaint positions (total) _____
68. What is the position-manning schedule? _____

69. Does the complaint taker maintain some type of status system (i.e., board, file . . .)? ☐ Yes ☐ No (Explain)

70. Describe any other activity in the service/complaint room besides the taking of service requests or complaints.

71. How do messages get from the call taker to the dispatcher or vice versa?

72. Does department have separate emergency and administrative phone numbers?
☐ Yes ☐ No
- a. If no, how many incoming lines are there? _____
- b. If yes, how many incoming lines are there for: Emergency _____,
Administration _____.
- c. Does the department utilize 911? ☐ Yes ☐ No
If yes, explain _____

d. How many unlisted number lines does the department have for its own business? _____

e. Are telephone lines recorded? ☐ Yes ☐ No

73. What is the volume of phone calls? (Enter below)

Telephone Number	Total Number of Calls Past Year		Total Number of Calls During Monitored Busy Period	
	Dispatch	Non-Dispatch	Dispatch	Non-Dispatch

Length of Busy Period (Hours) _____

Time and Date of Monitoring _____

74. What are the costs? (Confirm or collect figures from chart, p. 88)

Example:

Type of Line	Installation	Monthly
Emergency		
Administrative		

75. Is there any back-up telephone equipment? ☐ Yes ☐ No

If yes, describe back-up _____

76. Do the operators handle telephone calls for other services (e.g., fire, public works)? ☐ Yes ☐ No

If yes, which services? _____

Dispatch System Data

77. Number and location of dispatcher positions? _____

78. What is the dispatch position manning schedule? _____

79. Are radio channels recorded? ☐ Yes ☐ No
80. Who selects service response? _____
81. Who services or prepares complaint form? _____
82. Who marks service unit back in service? _____
83. How many status levels (i.e., available, enroute, on assignment, out of service, . . .) are there for field personnel? _____
84. What are they? _____
85. Are any levels of status of low priority so that a man assigned to a lower level complaint can be reassigned to a higher level complaint?
Yes ☐ No ☐
86. Describe the status level priorities and who decides to reassign a man.

87. Are there any priorities assigned to complaint assignments (e.g., immediate dispatch, delayed dispatch). Yes ☐ No ☐
88. If yes, describe the priorities and how the priority of a complaint is determined and then communicated to service providers. _____

Dispatch Volume Data

89. What is the volume of radio messages? (Enter below)

Channel	Total Number of Messages Past Year	Total Number of Messages During Monitored Busy Period	Average Radio System Delay During Busy Period (seconds)

Length of Busy Period (hours) _____
Time and Date of Monitoring _____

90. Does the dispatcher handle radio messages for other services (e.g., fire, public works)? ☐ Yes ☐ No

91. If yes, which services? _____

92. Other data _____

93. What volume for personal uses? _____

94. What volume for repeats? _____

95. What volume for abuses? _____

Maintenance Service96. Does agency have own maintenance service organization? ☐ Yes ☐ No(Self-Servicing Agency)

a. Number of technicians _____

b. Location of service facility(s) _____

c. Are there any current plans for service-shop changes? _____

d. Other data _____

(Contract or Other Service)

e. Who is the servicing agency (company, other agency, etc.)?

f. Where are they located? _____

g. Number of technicians? _____

h. Must mobiles go to shop for service? ☐ Yes ☐ No

i. Other data _____

97. Average length stay in shop? _____

98. Design system recommendations? _____

III. C. CRITIQUE OF THE MONITORING FORMS

Telephone Tally

Telephone Message Length Sheet

Radio Tally

Radio Message Length Sheet

The telephone tally and radio tally sheets required some explanation by the interviewer, but were, on the whole, understandable by the data collector. Both forms were used at the City of Dillon administrative office. No other participating agencies/departments operated independently of the Beaverhead Central Dispatch System.

The City of Dillon keeps no record of its telecommunications transactions. The city agreed to record the desired information for a 2-week (10-work day) period (see Appendix C) in its office of the secretary/receptionist/dispatcher. Pinpointing a "busy period" for this office was not possible as hourly fluctuations in communications do not occur, except during emergencies.

I did not request data for the telephone and radio message length sheets. Because the telephone/dispatch person is also the receptionist/secretary, and because the telephone and radio tallies were already demanding much time, I decided not to overburden her and perhaps antagonize officials. If the message length information is deemed to be important to the Telecommunications Project, I suggest that someone be hired by the Telecommunications Department for the express purpose of gathering that data.

The Beaverhead Central Dispatch System is an extremely busy system. Only one dispatcher is on duty at any time, thus it is difficult for that person to provide our requested tallies in addition to performing normal duties. I would again suggest that a person be hired by the Telecommunications Department to collect the information.

The Beaverhead County Central Dispatch System maintains accurate written logs of all communications transactions. After studying these logs, I designed a chart whereby some of the desired information could be tallied from existing records. Message types were coded by department, by radio channel or telephone line, and by dispatch or non-dispatch status (see Appendix D).

The dispatchers worked on these tallies during less eventful periods (i.e., 2 AM - 6 AM) and yielded the three-month data contained in Appendix E. Because each log has over 50 lines for transactions, each day may take several pages, and each month could contain over 100 pages of logged information, it would take significant time to codify a one-year period. Once again I propose that the Telecommunications Department hire someone to do this. The cooperation of Beaverhead County and City of Dillon personnel is not likely to be repeated throughout all Montana counties. The dispatchers contributed much energy and time, and deserve commendation from the Telecommunications Department for the work they have done.

III. D. ITEMS FOR PHYSICAL INVENTORY

DISPATCH SYSTEM DATA:

Describe capabilities provided at each position.

Position No. 1 _____

Position No. 2 _____

Position No. 3 _____

Does the dispatcher have supervisory control over remote transmit
locations? Yes ☐ No ☐

Does the dispatcher switch these locations in and out, or are they
connected at all times? _____

Maintenance Support

Telephone _____

Land/Mobile _____

Other _____

F.C.C. Compliance _____

Control Center Facilities _____

Telephone

Trunk Line _____

Control pair _____

Switching _____

Other _____

Radio Coverage and Interference

Traffic (radio) density_____

Interference (co-channel, adjacent channel, intermodulation,
...)_____

Other_____

Other Issues

New Technology_____

Frequency Spectrum Availability_____

The following agencies or departments are probably land/mobile radio system users:

County Commissioners

Sheriff & Deputies

Road Crews(city&county)

Search & Rescue

Ski Patrol

Fire Department (several districts)

Emergency Medical Services

Civil Defense

Mayor

Police & Patrolmen

Water & Sewers

Streets & Alleys

Montana Highway Patrol

Fish & Game

Forest Service

Stock/Brand Inspector

Veterinarians

List below the computer and/or teletypewriter terminals the agency uses.

Be sure to indicate if a terminal is shared between two or more networks or information retrieval systems. _____

Who operates the terminals? _____

What are the physical locations of the terminals? _____

BEAVERHEAD COUNTY - 1980-81

(All levies are given in mills)

Taxable Valuation - \$17,947,567

1979-80 Taxable Valuation - \$16,385,338

STATE FUNDS	5.65	CITY OF DILLON	
		Taxable Valuation - \$3,521,884	
COUNTY FUNDS		General	40.75
General	23.50	Streets and Alleys	12.00
Road	12.00*	Parks and Playgrounds	4.25
Bridge	5.00	Public Library	4.50
Poor	6.25	Volunteer Fire	2.00
Extension Agent	1.00	Metro-Police	1.50
Fair	1.25	TOTAL (Last Year Same)	65.00
Airport	.45		
Weed	1.00	TOWN OF LIMA	
Senior Citizens	.50	Taxable Valuation - \$170,793	
Hospital	3.00	General	50.10
Cemetery	2.00	TOTAL (Last Year 45.50)	50.10
Sub-Total (Last Year	55.95		
50.85)			

High School General	15.00
Transportation	2.76
Retirement	6.86
Sub-Total	24.62

General School	25.00
Retirement	10.92
Sub-Total	35.92

GRAND TOTAL 122.14

HIGH SCHOOL DISTRICT LEVIES

Dist. Name or Number	General	Insurance	Adult Educ.	Transp. Fund	Bond Int. and Sink.	Total Mills
BCHS	23.98	.46		3.17 (1)	2.71	30.32
Lima	5.68	.32		7.08		13.08

SCHOOL DISTRICT LEVIES

Dist. Number	General	Dist. Transp.	Tuition	Insurance	H.S. Special	Bond Int. and Sink.	Total Mills
7	16.48	12.01	.65		30.32		59.46
10	36.00	7.89	.01	.92	30.32	6.88	82.02
11	24.08	3.51	3.96		30.32		61.87
12	9.44	2.97		.16	13.08	4.05	29.70
16	15.81	1.54	.47	.18	30.32		48.32
19	9.44	2.97		.16	30.32	4.05	46.94
21	16.02				30.32		46.34
22	9.44	2.97		.16	30.32	4.05	46.94
24	25.67	.30			30.32		56.29

26	.01	9.36		30.32	4.36	44.05
33	9.44	2.97	.16	15.79	4.05 (2)	32.41
36	9.44	2.97	.16	15.79	4.05	32.41

SPECIAL DISTRICTS

Fire District #1	.02076
Fire District #2	1.50
Fire District #3	3.00

SUBJECT AREAS AND LEVELS OF INSTRUCTION

I. COURSE LEVELS

Basic and In-Service

Intermediate

Advanced

II. SUBJECT AREAS

Basic and In-Service Courses

1. Introduction to Law Enforcement
2. Police Ethics
3. Laws of Arrest, Search and Seizure, and Criminal Law
4. Rules of Evidence
5. Miranda Decision
6. Civil Liabilities
7. Latent Prints
8. Physical Evidence
9. Dangerous Drugs
10. Bomb Recognition
11. Burglary Investigation
12. Case Preparation
13. Crime Scene Protection
14. Courtroom Demeanor and Testifying
15. Crisis Intervention
16. Description of Persons
17. General Crime Scene Investigation
18. Informant Development
19. Outdoor Arrest Problems
20. Plaster Casting
21. Police Photography
22. Practical Case
23. Sources of Information
24. Police Communication Operations
25. Rumor Clinic
26. Notetaking
27. Abnormal Behavior
28. Handcuffing, Searching Techniques and
Transportation of Prisoners
29. Interrogation Techniques
30. Patrol Procedures and Techniques
31. Police Community Relations
32. Police Press Relations
33. Suicide Prevention

34. Public Speaking
35. Report Writing
36. Public Relations
37. Defensive Driving
38. Juvenile Procedures
39. Self-Defense Tactics
40. Firearms Safety
41. Fundamentals of Police Weaponry
42. Firearms (Legal Aspect and Departmental Policy)
43. Firearms Range
44. First Aid
45. Legal Research
46. Court Organization and Procedure
47. Judicial System and Jurisdictions
48. Gambling
49. Assault Cases
50. Auto Theft Cases
51. Robbery Cases
52. Sex Crimes
53. Injury and Death Cases
54. Larceny and Stolen Property
55. Disturbance and Disorderly Conduct Cases
56. Family Disturbance Cases
57. Prowler Cases
58. Traffic Direction
59. Traffic Citations and Arrests
60. Traffic Law Enforcement
61. Accident Investigation
62. Traffic Engineering and Police

Intermediate Courses

63. Bank Robbery Investigations
64. Rape Investigations
65. Crime Scene Photography
66. Interrogations and Interviews
67. Responding to Silent Alarms
68. New Criminal Codes
69. Safe Burglary Demonstration
70. Safe Burglary Investigations
71. Forensic Pathology
72. Firearms Safety
73. Firearms Training
74. Practical Cases
75. Police-Press Relations

Advanced Courses

76. Criminal Justice System
77. Constitutional Law
78. Basis for Law
79. Court Structure and Jurisdiction
80. Court Decisions
81. Criminal Law
82. Rules of Evidence
83. Human Behavior and Relations
84. Abnormal Persons
85. Police and Minority Groups
86. Police and Militant/Non-Conformist Groups
87. Analysis of Patrol
88. Field Notetaking, Recording and Interrogation
89. Officer's Decision Making
90. Organized Crime and Vice
91. White Collar Crime
92. Narcotic and Dangerous Drugs
93. Sex Crimes
94. Tactical Use of Weapons
95. Range Demonstration and Familiarization
96. Police-Juvenile Relations

BASIC COURSE FOR CERTIFICATION OF
HIGHWAY PATROLMEN

B-4

The amount of training for which certification will be granted in the Basic Course for Highway Patrolmen shall be a total of 560 hours of instruction.

Requirement

1. Successful completion of 560 hours of instruction in the minimum prescribed subject areas at a certified training school:

<u>Curriculum</u>	<u>Hours</u>
I. Introduction to Law Enforcement	96
Notetaking and Orientation	
Effective Writing	
Effective Speaking	
General Semantics	
History of the Patrol	
Montana Geography and History	
Highway Construction and Maintenance	
Highway Patrol Retirement	
Police Ethics and Press Relations	
Rules and Regulations	
Spelling	
Telephone Courtesy	
Communications	
Safety and Education	
Graduation	
II. Police Procedures - General and Traffic	206
Accident Investigation	
Chemical Tests	
Defensive Driving	
Department Forms	
Direction of Traffic	
Drinking Driver Enforcement	
Driver Improvement	
Driver Licensing	
Drugs	
Electrical Emergencies	
Enforcement Tactics	
FBI Lab Services	
Gross Vehicle Weight	
Inspection and Roadblocks	
Police Vehicle Operations	
Radiological Emergency Operation	
Riot Control	
School Bus Inspection	
Stock Inspection	

<u>Curriculum</u>	<u>Hours</u>
III. Legal Aspects	92
Court Demeanor	
Court Preparation	
Court Systems	
Criminal Codes	
Laws of Arrest	
Rules of Evidence	
Rules of the Road	
Safety Responsibility	
Search and Seizure	
IV. Defensive Tactics	121
Firearms	
Self-Defense	
Physical Fitness	
V. First Aid	30
VI. Equipment	15
Camera Equipment	
Equipment and Uniforms	
Vehicle Equipment	

	<u>Offenses</u>	<u>Arrests</u>	<u>Index</u>	<u>Offenses</u>	<u>Arrests</u>	<u>Index</u>
Murder	1/1	1	22.3	1/1	1	22.3
Rape	3/3	3	66.9	3/3	3	66.9
Robbery	2/2	2	44.6	1/1	1	22.3
Assault	28/28	28	624.7	53/53	53	1198.7
Burglary	25/25	25	502.4	52/51	51	1110.2
Larceny	210/39	210	4185.4	224/54	54	1227.5
Auto Theft	15/1	15	334.7	10/3	3	223.1
Arson	1/1	1	22.3	2/2	2	44.6
Forgery	1/1	1	22.3	5/5	5	111.6
Fraud	4/4	4	89.2	0/0	0	0
Vandalism	130/17	130	2900.5	140/17	17	3123.6
Weapons	1/1	1	22.3	3/3	3	66.9
Sex Offenses	1/1	1	22.3	1/1	1	133.0
Drug Laws	3/3	3	66.9	5/5	5	111.6
Family & Child	0	0	0	7/7	7	151.2
Grand Total	425/111	425	9482.4	532/119	119	11,810.7

NOTES: Crime index does not include disorderly conduct, resisting arrest, obstructing justice, obstructing a peace officer, escape, liquor laws, juvenile laws, and kidnapping plus all other criminal laws.

Crime in Dillon rose 20% in 1978 compared to 1977. The average increase in crime between 1974 and 1979 is 11.2% per year.

Dillon can anticipate 592 major crimes in 1981 if the present trend continues. In 1979, 358 crimes; 1983, 732 crimes; and, 1984, 811 crimes. (Estimates are based on a 1% increase in population)

Crime figures reflect only the crimes reported to police.

	<u>1974</u>	<u>1980</u>
Delony Arrests	11	18
Dist. Arrests	141	174
Juvenile Arrests	9	22
Attorney's Office	unk	65
Interference	43	297
Accidents	187	191
Traffic Stops	143	202
Traffic Citations	308	433
Investigations	127	117
Animal Complaints	102	162
Alarm Responses	128	154
Public Assistance	23	119
Other Calls	171	296
Public Protection	1	24

NOTE: Arrest totals reflect the total number of persons arrested, not the total number of charges filed against the arrestees. i.e., a person arrested may have multiple charges against him and the totals would only show one arrest.

- EMS Physician Consultants.
- EMS Project Director.
- EMS Systems Coordinators.
- EMS Systems Consultants.

Effectiveness of the system in providing manpower should be documented according to the evaluation methods prescribed in Chapter IV.

2. Training - The provision for appropriate training (including clinical training) and continuing education programs which (1) are coordinated with other programs in the system's service area which provide similar training and education and (2) emphasize veterans of the Armed Forces with military training and experience in health care field and of appropriate public safety personnel in such areas.

"Appropriate public safety personnel" includes police, firemen, lifeguards, park rangers and other public employees charged with maintaining the public safety.

The grantee should address curricula utilized that meet national criteria and guidelines established for individual manpower elements; where and by whom is such training being conducted; a description of the certification, recertification and revocation process developed to maintain the quality of EMS personnel; and methods introduced or planned for resolution of skill maintenance problems.

Each program must develop measures of quality and effectiveness of training based upon the evaluation methods prescribed in Chapter IV.

3. Communications - Provisions for linking the personnel, facilities and equipment by centrally coordinated communications systems so that requests for emergency health care services will be handled by a facility which (1) utilizes emergency telephonic screening, (2) utilizes or will utilize the universal emergency telephone number 911, and (3) will have direct communication connections and interconnections with the personnel, facilities, and equipment of the system and with other appropriate emergency medical services systems.

The system should include a command and control center which would be responsible for establishing those communication channels and allocating those public resources essential to the most effective and efficient EMS management of the immediate problem. The center should have the necessary equipment and facilities to permit immediate interchange of information essential for both the system's resource and medical management and control.

Emergency Medical Services "Program Guidelines"
 Sept 11, 1971

The EMS communications system must address access, allocation of resources, centralized coordination and medical control for basic life support and advanced life support.

The communication elements should include:

Access providing public interface with the emergency resource system.

- ° 911.
- ° Alternative single access number.
- ° Provisions for auditory handicapped individuals.
- ° Provision for multilingual access.

Resource Management Function

- ° Central Dispatch or centrally coordinated dispatch.
- ° Coordination of EMS and other public services.

Medical Control Function

- ° Medical communications between field personnel and resource hospital for diagnosis, treatment and triage.

Hospital to Mobile

- ° Basic voice.

Hospital to Hospital (Resources, Associate)

- ° Basic voice.
- ° Advanced biomedical telemetry (optional).

Program operation experience with "911" systems providing access to police, fire, and EMS has shown that approximately 85% of the incoming calls involve police services; 10% fire services, and 5% emergency medical services. Applicants should thoroughly investigate the implementation and use of 911 as the community access number. Funds under this Act may be used to assist implementation of a 911 system commensurate with the level of EMS usage.

A 911 implementation plan should be developed during the planning phase. If the community is not prepared for immediate 911 implementation, the communications plan should set forth a time at which 911 will be reexamined.

HEW supports the ultimate transfer of EMS system communications to the UHF band. Grant applications and EMS system planning documents will be carefully evaluated in accordance with this policy. When the requested project involves a particular completed VHF system, a case by case evaluation of the proposed methods of interface between UHF and VHF systems will be made. Provision for telecommunication equipment must be made at the command control center with appropriate interface to the public safety agency to provide for access by persons with auditory handicaps. In addition, provision must be made for predominate population groups in the area with limited English speaking ability.

The supervising medical control resource facility (communication base) must be responsible for monitoring all ALS communications and notification of other receiving hospital(s) so that they will be aware of the problem, and can assume responsibility for the care of the patient immediately upon arrival to their facility.

This supervising facility is responsible for field decisions of triage and transportation of a patient to an appropriate facility or to a special care unit in accordance with previously developed patient triage/transfer guidelines and agreements.

Effectiveness of the system in providing efficient and effective communication in relation to access, central dispatch and medical control appears in Chapter IV.

Transportation - This component shall include an adequate number of necessary ground, air and water vehicles and other transportation facilities properly equipped to meet the transportation and EMS characteristics of the system area. Such vehicles and facilities must meet appropriate standards relating to location, design, performance, and equipment; and the operators and other personnel for such vehicles and facilities must meet appropriate training and experience requirements.

The elements of transportation should include:

Ground--Basic Life Support

- ° Radio communication providing for vehicle control, for medical control and consultation.
- ° Ambulance vehicles meeting GSS (KKK-A-1822) specifications and including equipment recommended by the American College of Surgeons.
- ° At least two EMT-As.
- ° Ambulance locations permitting (for 95% of all calls) a maximum of a 30 minute accurate response time in rural areas.

RADIO TALLY SHEET INSTRUCTIONS

1. CITY--Enter the name of the city in which the tally is conducted (e.g., Missoula).
2. DATE--Enter the date on which the tally is conducted (e.g., 7 May 1973).
3. POSITION--Enter the assigned position number at which the tally sheet is being utilized. For example, if there are two positions at which radio calls are processed, each must be provided with a tally sheet and assigned a position number. The POSITION entry for the first position would then be "1 OF 2," and the entry for the second position would be "2 OF 2."
4. SHIFT--Enter the eight hour time span representing the shift over which the tally is conducted (e.g., 8:00 a.m. - 4:00 p.m.).
5. FREQUENCY--Radio messages must be tallied according to the frequency (channel) on which they are processed. Space is provided to record up to four frequencies (i.e., F1, F2, F3 and F4). However, if any or all frequencies have been given a specific name, this name must also be entered in the FREQUENCY column.
6. MESSAGE TYPE--Messages on a particular frequency must be further classified according to type. The five radio message types are:
 - Dispatch--A message that directs a unit or units to respond to a particular incident.
 - Status Change--A message that changes the status of a mobile unit.
 - Records Check--A message that is generated by field personnel requesting information on a person or property (e.g., license check, stolen property check, etc.).
 - Repeat--A message that cannot be understood as transmitted, and which, therefore, requires the individual receiving the message to ask that the sender repeat it.
 - Other--Any message that cannot be classified into one of the types previously described.

It is important to note that a message, as defined for the traffic tally, consists of the two-way conversation between a dispatcher and a unit located in the field regarding one subject (message type). For example, an office in the field may first request a records check. At some later time, the dispatcher would then relay the required information back to the unit. Even though there was a time lag between these two conversations, they must be counted as only one message.

7. HOURLY TALLIES--This portion of the sheet is used to actually tally radio messages processed in the dispatch center. However, before beginning the tally, the appropriate hour time-interval must be entered in each of the eight column headings under HOURLY TALLIES (e.g., 8-9, 9-10, etc.). Once this has been completed, the tallies may be conducted.

As each radio message is processed, it must be categorized according to frequency, then according to type of message, and finally, according to hour of the shift (day). As a result of this procedure, a specific box will be located in which to record the tally. Each call is tallied by entering a small vertical tick mark. Typical examples are:

I = 1	 = 5
II = 2	 I = 6

The tally should be conducted for a period of from 21 to 28 days to ensure that the collected data are representative of the actual radio traffic loading.

Take great care in tallying each radio message because the accuracy of the communications study is primarily dependent upon the accuracy with which the tallies are made. An accurate tally will result in an improved system which is more responsive to the needs of dispatch personnel.

POSITION: WPT 6

DATE: 11/10/12

0.00 3.00

HOURLY TALLIES

FREQ	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
F1: Unit 1	DISPATCH								
	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER								
F2: Unit 2	DISPATCH								
	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER								
F3: Unit 4	DISPATCH		///	///	///	///	///	///	///
	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER				1				1
F4: Unit 6	DISPATCH								
	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER								

3 2 3 1 3 3

POSITION: OF

HOURLY TALLIES

SHIFT: 8:00 to 5:00

FREQ	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
F1: Unit 1	DISPATCH									
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F2: Unit 2	DISPATCH									
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER	1		1		1		1	1	
F3: Unit 4	DISPATCH		11	1	1	1		111		
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F4: Unit 6	DISPATCH	1								
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									

1 2 2 1 1 2 3 1

POSITION: OF

HOURLY TALLIES

SHIFT: 8:00 to 5:00

FREQ	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
F1: Unit 1	DISPATCH									
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F2: Unit 2	DISPATCH			II						
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F3: Unit 4	DISPATCH		I	I	II	III			II	I
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F4: Unit 6	DISPATCH									
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									

1 3 2 3 2 2 1

SHIFT: 8:00 to 5:00

HOURLY TALLIES

[illegible]

POSITION: OF

HOURLY TALLIES

SHIFT: 07:00 +0 5:00

FREQ	MESSAGE TYPE	HOURLY TALLIES									
		8:00	9:00	10:00	11:00	12:00	1:00	2:00	3:00	4:00	5:00
F1: Unit 1	DISPATCH										
	STATUS CHANGE										
	RECORDS CHECK										
	REPEAT										
	OTHER							1			
F2: Unit 2	DISPATCH										
	STATUS CHANGE										
	RECORDS CHECK										
	REPEAT										
	OTHER							11			
F3: Unit 4	DISPATCH									1	
	STATUS CHANGE										
	RECORDS CHECK										
	REPEAT										
	OTHER						1				
F4: Unit 6	DISPATCH	1									
	STATUS CHANGE										
	RECORDS CHECK										
	REPEAT										
	OTHER										

11

8

8

9

1

SH11: 8.00 + 0.5.00

HOURLY TALLIES

FREQ		HOURLY TALLIES									
MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00		
DISPATCH											
STATUS CHANGE											
RECORDS CHECK											
REPEAT											
OTHER											
DISPATCH											
STATUS CHANGE											
RECORDS CHECK											
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STATUS CHANGE											
RECORDS CHECK											
REPEAT			</								

POSITION: OF

HOURLY TALLIES

DATE: 8:00 TO 5:00

FREQ	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
F1: Unit 1	DISPATCH									
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F2: Unit 2	DISPATCH									
	STATUS CHANGE			1						
	RECORDS CHECK									
	REPEAT									
	OTHER			1						
F3: Unit 4	DISPATCH	111	1	1	111		11			
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									
F4: Unit 6	DISPATCH	1								
	STATUS CHANGE									
	RECORDS CHECK									
	REPEAT									
	OTHER									

3 1 3 5 2

CITY: LD, LDN

RADIO TALLY SHEET

DATE: 9 MARCH 1971

POSITION: OF

SHIFT: 2:00 TO 5:00

FREQ

MESSAGE TYPE

HOURLY TALLIES

8:00-9:00

9:00-10:00

10:00-11:00

11:00-12:00

12:00-2:00

2:00-3:00

3:00-4:00

4:00-5:00

DISPATCH

STATUS CHANGE

RECORDS CHECK

REPEAT

OTHER

DISPATCH

STATUS CHANGE

RECORDS CHECK

REPEAT

OTHER

DISPATCH

STATUS CHANGE

RECORDS CHECK

REPEAT

OTHER

DISPATCH

STATUS CHANGE

RECORDS CHECK

REPEAT

OTHER

4: Unit 6F3: Unit 4F2: Unit 2F1: Unit 1

POSITION: OF

PADLOCK TAG SHEET

DATE: 8-06-5:00
SHIFT: 8:00 - 5:00

FREQ	MESSAGE TYPE	HOURLY TALLIES							
		8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
F1: Unit 1	DISPATCH								
	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER	1		1					
	DISPATCH	1					1		
F2: Unit 2	STATUS CHANGE		1						
	RECORDS CHECK								
	REPEAT								
	OTHER								
	DISPATCH		1	11	111	111	1		
F3: Unit 4	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER								
	DISPATCH								
F4: Unit 6	STATUS CHANGE								
	RECORDS CHECK								
	REPEAT								
	OTHER								

2 2 3 3 3 2

POSITION: OF

HOURLY TALLIES

SHIFT: 8:00 to 5:00

TRUNK	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
T1:	DISPATCH		///	//	///	/	//	////	/	//
	MULTIPLE CALL									
	ADMINISTRATIVE	//		//	//	//		//		
	OTHER				/		//		/	/
T2:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T3:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T4:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T5:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									

2

4

4

6

3

4

6

2

3

CITY: Dillon

TELEPHONE TALLY SHEET

DATE: 2 Feb. 1981

POSITION: OF

SHIFT: 8:00 to 5:00

HOURLY TALLIES

TRUNK	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
T1:	DISPATCH	1	III	III	III	IIII	IIII	1	
	MULTIPLE CALL								
	ADMINISTRATIVE	1	1	1					
	OTHER		II	1	1		III		
T2:	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
T3:	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
T4:	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
5:	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								

HOURLY TALLIES

8:00 TO 9:00

TRUNK	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
T1:	DISPATCH		//	I	I		///	///	///	I
	MULTIPLE CALL									
	ADMINISTRATIVE	I	I	//					///	
	OTHER		I		///		I	I	//	
T2:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER		//	//			I			
T3:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T4:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T5:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									

1 6 5 4 5 4 8 1 13

SHIFT: 8.00 to 5.00

[illegible]

CITY: 11071
POSITION: OF

TELEPHONE: 11071
ALLY SHEET

DATE: 4/1/81
SHIFT: 8:00 TO 5:00

TRUNK	MESSAGE TYPE	HOURLY TALLIES							
		8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00
T1:	DISPATCH		 	 		 	 	1	1
	MULTIPLE CALL								
	ADMINISTRATIVE					1			
	OTHER		 			 	1		
	DISPATCH								
T2:	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
	DISPATCH								
	MULTIPLE CALL								
T3:	ADMINISTRATIVE								
	OTHER								
	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
T4:	OTHER								
	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
T5:	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
	DISPATCH								

2 16 8 14 2 1 4

CITY: Dillon

TELEPHONE TALLY SHEET

DATE: 5 March 1981

POSITION: OF

SHIFT: 8:00 to 5:00

TRUNK MESSAGE TYPE

HOURLY TALLIES

T5:	T4:	T3:	T2:	T1:	HOURLY TALLIES											
					8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00			
DISPATCH	MULTIPLE CALL	ADMINISTRATIVE	OTHER	DISPATCH	///	///	///	///	///	///	///	///	///			
					///	///	///	///	///	///	///	///	///			
MULTIPLE CALL	ADMINISTRATIVE	OTHER	DISPATCH	MULTIPLE CALL												
ADMINISTRATIVE	OTHER	DISPATCH	MULTIPLE CALL	ADMINISTRATIVE												
OTHER	DISPATCH	MULTIPLE CALL	ADMINISTRATIVE	OTHER												

POSITION: OF

TELEPHONE CALLY SHEET

DATE: 10 MAR 4 1941
SHIFT: 8:00 TO 5:00

HOURLY TALLIES

TRUNK	MESSAGE TYPE	8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	12:00-1:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
T1:	DISPATCH	1	///	///	///	1	1	1	///	1
	MULTIPLE CALL			1						
	ADMINISTRATIVE	///	1	///						
	OTHER									
T2:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T3:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T4:	DISPATCH									
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									
T5:	DISPATCH	1								
	MULTIPLE CALL									
	ADMINISTRATIVE									
	OTHER									

3 4 7 2 1 1 2 1

CITY: *Dillon*

TELEPHONE TALLY SHEET

DATE: *9 MARCH 1981*

POSITION: OF

SHIFT: *8:00 + 05:00*

TRUNK

MESSAGE TYPE

8:00-9:00

9:00-10:00

10:00-11:00

11:00-12:00

1:00-2:00

2:00-3:00

3:00-4:00

4:00-5:00

HOURLY TALLIES

T1:

DISPATCH

MULTIPLE CALL

ADMINISTRATIVE

OTHER

DISPATCH

MULTIPLE CALL

ADMINISTRATIVE

OTHER

DISPATCH

MULTIPLE CALL

ADMINISTRATIVE

OTHER

DISPATCH

MULTIPLE CALL

ADMINISTRATIVE

OTHER

DISPATCH

MULTIPLE CALL

ADMINISTRATIVE

OTHER

T2:

T3:

T4:

T5:

TRUNK	MESSAGE TYPE	HOURLY TALLIES							
		8:00-9:00	9:00-10:00	10:00-11:00	11:00-12:00	1:00-2:00	2:00-3:00	3:00-4:00	4:00-5:00
T1:	DISPATCH	1	1111	1111	11	1111	11	11	
	MULTIPLE CALL								
	ADMINISTRATIVE	1	1			1	1		11
	OTHER			11		1		1	11
	DISPATCH								
T2:	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
	DISPATCH								
	MULTIPLE CALL								
T3:	ADMINISTRATIVE								
	OTHER								
	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
T4:	OTHER								
	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
T5:	DISPATCH								
	MULTIPLE CALL								
	ADMINISTRATIVE								
	OTHER								
	OTHER								

2 5 5 2 6 3 3 4 2

[illegible]

WALK-IN:

1. Sheriff: 98
2. Police: 87
3. Highway Patrol: 3
4. Fish & Game: 2
5. Fire Dept: 0
6. Livestock Inspector: 0
7. Ambulance: 0

LOW BAND:

WAH 92	State	39.82 MHz	F-1
KXK 427	State	39.82 MHz	F-1
	Region	39.88 MHz	F-2
	Local	39.94 MHz	F-3
	Repeater	39.56 MHz	F-4

COUNTY HIGH BAND:

KLV 872	Local	155.805	MHZ	F-1
WCU 966	Repeater	155.100	MHZ	F-2

KXK 427 REPEATER:

1. Sheriff: 46
2. Fish & Game: 1
3. Highway Patrol: 0
4. Livestock Inspector: 0

BAPTIST HOSPITAL:

KLV 873	Local	155.805	MHZ	F-1
WCU 966	Repeater	155.100	MHZ	F-2
KQF 612	Amb-Hosp.	155.280	MHZ	F-3
KQF 612	Hosp-Hosp.	155.240	MHZ	F-4

KXK 427 REGIONAL & LOCAL:

1. Sheriff: 105
2. Police: 545
3. Fish & Game: 1
4. Highway Patrol: 52
5. Livestock Inspector: 1
6. Fire Dept.: 0

WAH 92:

1. Sheriff: 6
2. Police: 0
3. Highway Patrol: 17
4. Livestock Inspector: 0
5. Other Stations: 10

KLV 872: (Ambulance, Search Rescue, & Misc. Calls)

1. Search & Rescue: 2
2. Ambulance: 23
3. Sheriff: 3

WCU 966:

1. Search & Rescue: 1
2. Ambulance: 12

TELECOMMUNICATIONS FOR MONTH OF SEPTEMBER 1986

E-2

PHONE DISPATCH:

1. Sheriff: 56
2. Police: 271
3. Highway Patrol: 10
4. Fish & Game: 1
5. Stock Inspector: 1
6. Ambulance: 14
7. Hospital Hotline: 10
8. Fire Phone: 4
9. Fire Hall Hotline

PHONE NON-DISPATCH:

1. Sheriff: 376
2. Police: 282
3. Highway Patrol: 1
4. Fish & Game: 1
5. Stock Inspector: 1

TELECOMMUNICATIONS FOR MONTH OF OCTOBER

WALK-IN:

1. Sheriff: 64
2. Police: 117
3. Highway Patrol: 5
4. Fish & Game: 7
5. Fire Dept: 4
6. Livestock Inspector: 0
7. Ambulance: 2

KXX 427 REPEATER:

1. Sheriff: 33
2. Fish & Game: 16
3. Highway Patrol: 14
4. Livestock Inspector: 0

KXX 427 REGIONAL & LOCAL:

1. Sheriff: 53
2. Police: 469

3. Fish & Game: 13
4. Highway Patrol: 35
5. Livestock Inspector: 6
6. Fire Dept.: 0

WAH 92:

1. Sheriff: 3
2. Police: 0
3. Highway Patrol: 17
4. Livestock Inspector: 0
5. Other Stations: 38

KLV 872: (Ambulance, Search Rescue, & Misc. Calls)

1. Search & Rescue: 0
2. Ambulance: 21
3. Sheriff: 3

WCU 966:

1. Search & Rescue: 0
2. Ambulance: 5

PHONE DISPATCH:

1. Sheriff: 96
2. Police: 244
3. Highway Patrol: 35
4. Fish & Game: 17
5. Stock Inspector: 5
6. Ambulance: 13
7. Hospital Hotline: 8
8. Fire Phone: 12
9. Fire Hall Hotline: 12

PHONE NON-DISPATCH:

1. Sheriff: 198
 2. Police: 128
 3. Highway Patrol: 10
 4. Fish & Game: 7
 5. Stock Inspector: 1
-

TELECOMMUNICATIONS FOR MONTHS OF NOVEMBER & DECEMBER

WALK-IN:

1. Sheriff: 106
2. Police: 112
3. Highway Patrol: 5
4. Fish and Game: 3
5. Fire Dept.: 0
6. Livestock Inspector: 2
7. Ambulance: 0

KXK 427 REPEATER:

1. Sheriff: 45
2. Fish & Game: 2
3. Highway Patrol: 18
4. Livestock Inspector: 2

KXK 427 REGIONAL & LOCAL:

1. Sheriff: 92
2. Police: 619
3. Fish and Game: 5
4. Highway Patrol: 175
5. Livestock Inspector: 15
6. Fire Dept.: 0

WAH 92:

1. Sheriff: 0
2. Police: 0
3. Highway Patrol: 17
4. Livestock Inspector: 0
5. Other Stations: 20

KLV 872: (Ambulance, Search Rescue, & Misc. Calls)

1. Search & Rescue: 0
2. Ambulance: 10

Phone Dispatch:

1. Sheriff: 99
2. Police: 328
3. Highway Patrol: 22
4. Fish & Game: 3
5. Stock Inspector: 2
6. Ambulance: 31
7. Hospital Hotline: 13
8. Fire Phone: 18
9. Fire Hall Hotline: 18

Phone Non-Dispatch:

1. Sheriff: 333
2. Police: 297
3. Highway Patrol: 26
4. Fish & Game: 3
5. Stock Inspector: 1

TELECOMMUNICATIONS TELETYPE 1980

	Sheriff	Police	Highway Patrol	Fish & Game	Stock Insp.
Oct. & Nov. 27	152	12	1	0	
1'S 38	67	7	0	0	

Messages sent from all Departments.

October 28	97	19	12	0
1'S 31	65	4	0	0

Messages sent from all Departments.

November 10	63	2	1	0
1'S 23	96	1	0	0

Messages sent from all Departments.

tr NCIC: Sept. - 4 Oct. - 2 Nov. - 0 Dec. 0

rel NCIC: Sept. - 1 Oct. - 0 Nov. - 1 Dec. 0

for two weeks, August 25, 1980 to September 7, 1980
2100 hrs. to 0200 hrs. for Police and Sheriff only.

SHERIFF

Phone Dispatch - 7

Non-Dispatch - 1

Walkin - 0

KXX 427- 15

POLICE

Phone Dispatch - 30

Non-Dispatch - 0

Walkin - 5

KXX 427 - 72

IFF'S DEPARTMENT:
Later.....4808
Doering.....2783
Reeder.....5092
Tash.....6253
son Phipps.....276-3311
Freeman.....689-2395
Mathson.....6445

ATCHERS:
e Stefanatz.....5615
ne Atwood.....4026
n Morrison.....6269
e Stewart.....5693
Traflet.....4718
Hull.....4655

CE DEPARTMENT:
Depew.....5762
les Osborn.....5754
Clark.....4652
Stewart.....5693
Peters.....4562

Gutcheck.....5781
Happ.....5462

ANA HIGHWAY PATROL:
Barnett.....5952
k Brown.....4560
ld Forsman.....2614

& GAME
h Haugland.....6357
e Hoem.....6212

K INSPECTORS:
Ripley.....5296
d Thomas.....2182
d Office.....6366

& POLICE JUDGES....4663
Delaney.....5383
Later.....2623
er's Jewelry.....2121
k Roy.....276-3579
Railroad Depot....5631
Off. Frank Hull....2159

ORNEYS:
verhead Co. Attorney.4306
Giltert, III.....4871
Attorney.....2612
Gilbert Jr.....5393
s & Dwyer.....2282
k Davis.....5861
Dooling.....6131
lz, Davis & Warren...2363
Hansen.....4301
Smith.....842-5505
Garrison.....842-5528
Jardine.....287-3832

BARRETT HOSPITAL.....2324
Air Ambulance.....5242
Ambulance Garage.....2833
Dillon Medical Clinic....5113

CHECK ALERT:
J.C. Penny's.....2992
Roberts Foods.....2357
Coast to Coast.....4412

SCHOOLS:
Bvhd. County High School..2361
Garage Building.....4244
Vocational Building.....4401
Physical Education.....4701
Parkview Elementary.....2373
Parkview Junior High.....2368
Mary Innes School.....2901

FIRE DEPARTMENT:
Mike Swetish..4446..ofc...4442
Asst. Chief...5730..ofc...4333

BEAVERHEAD COUNTY:
Airport.....9969
Assessor.....5612
Civil Defense Dept.....5321
Clerk & Recorder.....2642
Clerk of Court.....5831
Commissioners.....5245
Extension Service.....2842
Coroner....2112 or.....4080
County Planning.....4862
County Shop.....5561
County Weed Control.....2951
Welfare Dept.....2142
Custodial Engineer.....5582
Chris Kraft.....4977
District Judge's Chamber..5841
Treasurer.....5821

Montana Power.....2621
Vigilante Electric.....2327
Veterinary Hospital.....2385
Mountain Bell.....6101

CITY OF DILLON.....4245
Chamber of Commerce.....5511

Radio Maintainance:
Harvey Lake.....4514
Airway Facilities.....4588

National Guard Armory....2892
Sgt. Marty Malesich.....2777

SHERIFF'S DEPTS. OUT OF TOWN:
Deputy Faye Bumgarner.267-2167
Anaconda Sheriff.....563-5242
Butte Sheriff.....723-4015
Deer Lodge Sheriff....846-2711
Helena Sheriff.....442-7880
Virginia City Sheriff.843-5351

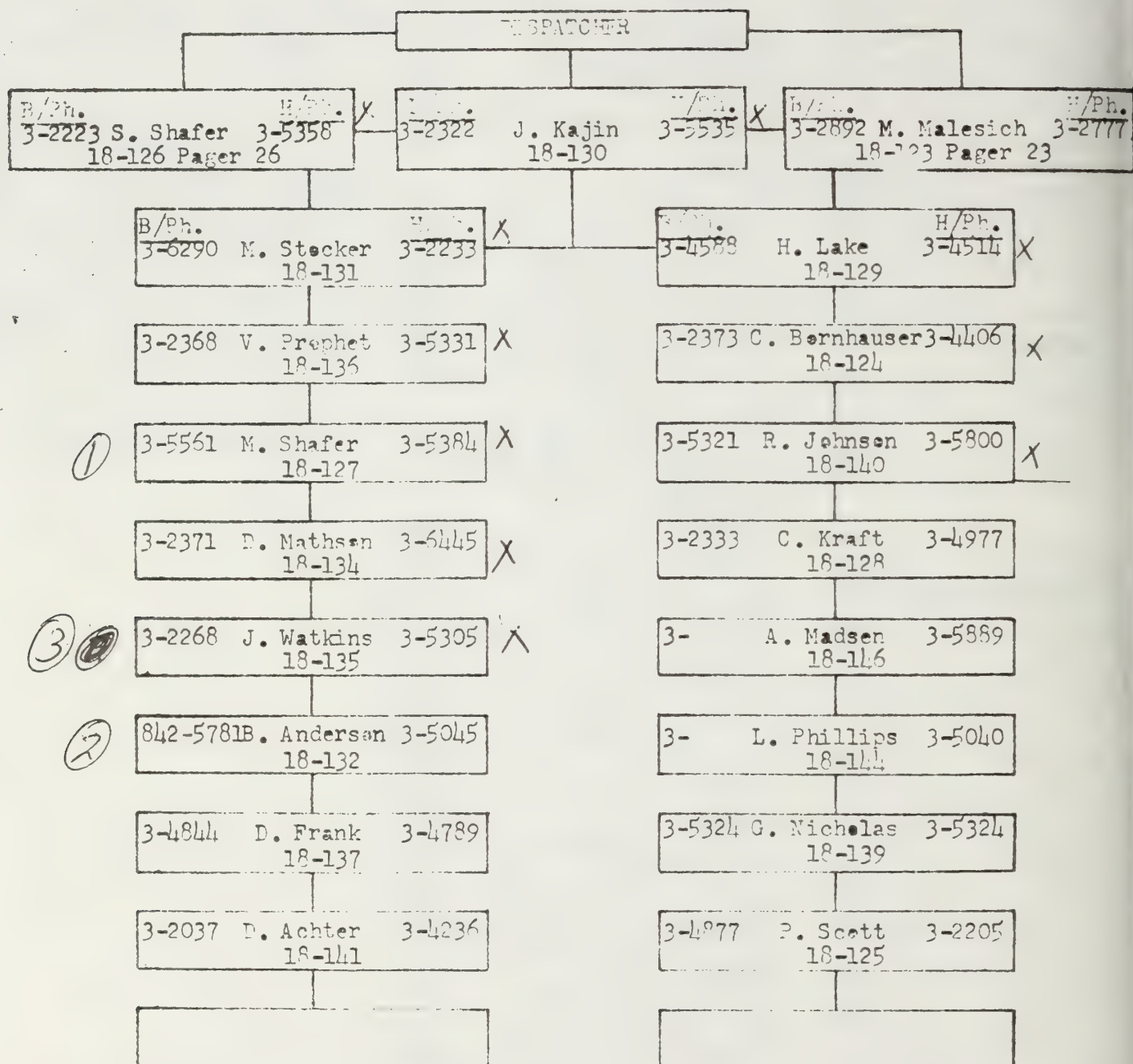
APPENDIX F
U.S. Government: F-1
U.S. Forest Service.....23
Post Office.....28
Bureau of Land Management....23
Bureau of Reclamation.....23

LETs Bureau.....449-28
Dept. of Immigration....442-52
Extradition Secretary....449-25
Mt. State Fire Marshall..449-20
Board of Crime Control...449-36
Jack Lodell, Region 51...563-39
Probation Off, J. Riley..723-89
Drug Councilor, Butte....723-65
Mt. Hwy. Patrol, Helena..449-30
" " " Patrol, Driver Exam.449-36
Montana State Prison.....846-13
Warm Springs.....693-22
Galen.....693-22
Mt. Hwy. Dept. Maintainance..22
Jack Brown, Foreman.....22

JAIL COOK:
Jo Kesel.....538

Sherry Dove
683-2717

TOM SCOTT'S HOME PHONE
183-185



Dispatcher calls one of the three persons. The person called in turn calls the other two and this calls M. Stocker and H. Lake. They will call the next person of the team.

DISPATCHER PERSONNEL

3-2383 R. Later 3-4808
18-1 Pager 01

3-2383 M. Doering 3-2783
18-2 Pager 02

3-2383 K. Reeder 3-5092
18-5 Pager 01

3-2333 J. Stewart 3-5693
18-145

276-3311G. Phipps 276-3411
18-3

689-2325M. Freeman 689-2397
18-4

HOSPITAL PAGING ASSIGNMENTS:

F-3

00 GROUP PAGING
01 O.B. Nurse
02 Duty Physician
03 Exray Technician
04 Lab Technician
05 Inhalation Technician
06 Surgical Nurses (2)
07
08 Hospital Maintenance
09 nurse Anesthetist

PS PAGING ASSIGNMENTS:

30 GROUP PAGING
31 K. Reeder (Hurst)
32 Eberline
33 M. Ehrismann
34 Chamberlain (Hurst)
35 B. Tash
36 Lowell

02 Later (Hurst) PAGE SEPARATELY, NOT ON
GROUP PAGING)

90 GROUP PAGING
91 Murray
92 S. Ehrismann
93 McGee
94 Troedsson (Hurst)
95 Puyear (Hurst)
96 Piazzola
97 Mautz
98 R. Richardson

MEDICAL EMERGENCY OR DISASTER - USE GROUP CALLS

EXAMPLE: 5 or more injured, page 80 or 20 &
attendants will respond.....

MISCELLANEOUS PAGING ASSIGNMENT:

01 Rick Later, Sheriff
02 Mark Doering, Undersheriff
12 Tom Depew, Chief of Police
23 Marty Malesich
26 Stan Shafer, Pres. of Search & Rescue
38 Women's Resource Center
39 Bob Cotton, Water Dept.
40 R. Johnson, Civil Defense
41 WMC Security
42 WMC Security
43 Ken Brunkhorst - Coroner
44
50 Fran Weipper - Mental Health
62 Andre Morris, Air Ambulance
87

SKI PATROL:

18-190
18-191
18-192 Swede Troedsson
18-193
18-194
18-195
18-196
18-197
18-198
18-199

ROAD DEPARTMENT:

18-200 Bob Miller (District #1)
18-201 Jim Nettik, Foreman
18-203 Dillon Maintaine (District #1)
18-204 Dillon Snow Plow
18-205
18-206
18-207
18-208
18-209
18-210
18-211 Joe Clemans, Foreman
18-212 Jackson Snow Plow
18-213
18-214
18-215
18-216 Do Not Assign
18-217
18-218
18-219
18-220 Do Not Assign
18-221 Jim Barrett, (District #3)
18-222 Do Not Assign
18-223 Neal Cherry, Foreman
18-224

MONTANA HIGHWAY PATROL:

143 Sgt. Barnett, Dillon
216 Frank Brown, Dillon
220 Harold Forsman, Dillon
222 Kerry Keyser, Ennis
269 C. Hecock, Three Forks
304 D. Schenk, W. Yellowstone
251 B. Dove, Whitehall
253 T. Anderson, Whitehall

LIVESTOCK INSPECTORS:

LS 516 Jack Ripley
LS 505 Lawrence Johnson, Helena
LS 514 Jerry Harrison, Missoula

FISH & GAME DEPT:

FG 31 Cpt. B. McKiernan, Bozeman
FG 32 Ken Shears, W. Yellowstone
FG 34 G. Haughland
FG 36 Sarge Hoems
FG 35 Jim DeBoer, Sheridan
FG 39 M. Vook, Butte
FG 510 B. Kocher, Butte
FG 320 Sgt. B. Hubbard, Bozeman

AMBULANCE & MEDICAL:

* 18-250 Dillon Ambulance #1 F-4
* 18-251 Dillon Ambulance #2
* 18-252 Dillon Air Ambulance (Portable & ag
18-253 Horse Prairie QRU
* 18-254 Lima Ambulance
18-255 Jackson QRU
18-256
18-257 Wisdom Ambulance
18-258 Wise River QRU
18-259
18-260 thru 18-269 not assigned

FOREST SERVICE:

FS-5 USFS INV., Tom Kings

FEDERAL:

708 Agent Tom Brown, Butte
711 Agent Gary Lincoln, Butte
729 Agent Hal Blomstrom

IMMIGRATION:

777 Bill Cumley, Helena

GVW MONTANA HIGHWAY PATROL:

GVW - 4 Frank Murphy, Helena
GVW - 9

MONTANA HIGHWAY MAINTANCE:

MHD - 358 Jack Brown

LOW BAND:

WAH 92	State	39.82 MHZ	F-1
KKK 427	State	39.82 MHZ	F-1
	Region	39.88 MHZ	F-2
	Local	39.94 MHZ	F-3
	Repeater	39.56 MHZ	F-4

COUNTY HIGH BAND:

KLV 872	Local	155.805 MHZ	F-1
VCU 966	Repeater	155.100 MHZ	F-2

BARRETT HOSPITAL:

KLV 873	Local	155.805 MHZ	F-1
VCU 966	Repeater	155.100 MHZ	F-2
KQF 612	Amb-Hosp.	155.280 MHZ	F-3
KQF 612	Hosp-Hosp.	155.340 MHZ	F-4

NOTE: Pagers will be assigned to EMT'S each month & rosters will be issued to various agencies to show which person has which pager (80 thru 98)

NOTE: Multiple of 10 digits (EX: 70, 80, 90) will be left open to facilitate paging the entire group.

OTHER STATION ON WAH 92 & KKK 427

KLR 274 Lima Base — KUU 555 Wisdom Base

ENFORCEMENT:

18-1 Rick Later (PAGER 01)
 18-2 Mark Doering (PAGER 02)
 18-3 Greyson Phipps, Lima
 18-4 M. J. Freeman, Wisdom
 18-5 Keith Reeder (PAGER 81)
 18-6 Ray Tash
 18-7
 18-8 City Police
 18-9 City Police
 18-10 City Police
 18-11
 18-12 Chief, Tom Depew (PAGER 12)
 18-13
 18-14
 18-15

DEPARTMENT:

18-16 Fire Chief, Mike Swetish
 18-17 A/Chief, Ron Bergeson
 18-18 Rural Truck #1
 18-19 Rural Truck #2
 18-20 Fireman (Group Call)
 18-21 Tank Truck
 18-22
 18-23 City Truck #1
 18-24 City Truck #2
 18-25 City Truck #3
 18-26
 18-27
 18-28
 18-29
 18-30
 18-31
 18-32
 18-33 Lima Fire Truck #1
 18-34 Lima Fire Truck #2
 18-35 Lima Fire Truck #3

SPECIAL & MISCELLANEOUS:

18-36 Mayor Lynch
 18-37 Assessor, Harold Peterson
 18-38 Women's Resource Center (Pager only)
 18-39 Bob Cottom & City Water Truck
 18-40 Rodger Johnson (Pager only)
 18-41 WMC Security
 18-42 WMC Security
 18-43 Coroner Brunkhorst (Also Pager)
 18-44 Deputy Coroner, Yuhasz
 18-45 Lloyd Thomas, Brand Inspector
 18-46 ~~Vet. Gordon Knorr~~
 18-47 ~~Vet. Wayne Nelson~~
 18-48 ~~Vet. Tom Williams~~
 18-49 City Water Dept. Truck
 18-50 Fran Weippert, Mental Health
 18-51 thru 18-99 Open
 - Equipped with Low Band Radio (WAH 92 & KXK 427)
 - Equipped with High Band Radio (KLV 872 & WCU 966)

COUNTY SCHOOL BUSES:

18-100 Reichle Bus (Glen F-5)
 18-101 Bus #1 (Highway 41)
 18-102 Bus #2 (Anderson & Schuler Lane)
 18-103 Bus #3 (Lower Blacktail)
 18-104 Bus #4 (EXTRA)
 18-105 Bus #5 (Ibeyville)
 18-106 Bus #6 (Webster Lane)
 18-107 Bus #7 (Melrose)
 * 18-108 Bus #8 (Upper Blacktail)
 18-109 Bus #9 (Shady Nook)
 18-110 Bus #10 (Lakner Lane)
 * 18-111 Bus #11 (EXTRA)
 18-112 Bus #12 (Argenta)
 18-113
 * 18-114 Bus #14 (Wisdom)
 18-115 Bus #15 (EXTRA)
 18-116 Bus #16 (Grant)
 18-117
 * 18-118 Bus # (Sheep Creek)
 * 18-119 Bus # (Lima to Dell)

SEARCH & RESCUE:

*KLV 872 CHANNEL 1
 WCU 966 CHANNEL 2 H/P B/ph
 18-1 Rick Later 4808 2383
 18-2 Mark Doering 2783 2383
 18-3 Greyson Phipps 276-3311 2383
 18-4 M.J. Freeman 689-2395 2383
 18-5 Keith Reeder 5092 2383
 18-6
 18-120 2 1/2 Ton Truck
 18-121 3/4 Ton Truck
 18-123 Marty Malesich 2777 2892
 18-124 Chuck Bornhauser 4406 2373
 18-125 Al Kajin 5425
 18-126 Stan Shafer 5358 2223
 18-127 Mike Shafer 5384 5561
 18-128 Chris Kraft 4977
 18-129 Harvey Lake 4514 4588
 18-130 Jim Kajin 5535 2322
 18-131 M. Stocker 2233
 18-132 Bob Anerson 5045
 18-134 Dave Mathson 6445 2371
 18-135 Jim Watkins 5305 2308
 18-136 Val Prophet 5331 2368
 18-137 D. Franks 4789 4844
 18-138 Ted Pinkerton 6331 2110
 18-139 Glen Nicholas 5324
 18-140 Rodger Johnson 5800 5321
 18-141
 18-142 Paul Pilgrim 4093 2801
 18-144 Lee Phillips
 18-145 Jack Stewart 5693 2333
 18-146 A. Madsen 5889
 18-192 Swede Troedsson 4510 2312

CIVIL DEFENSE:

18-140 Rodger Johnson 5800 5321
 18-151 thru 18-199 Open

Search + Rescue

F-6

Dispute Log

3-2223 Stan Shafer 3-5358 3-5561 Mike Shafer 3-5384 3-2892 Marty Malsich
18-126 18-127 Page 26 18-123 Pager 23

Jim Kajan Harvey Lake
3-2322 3-5535 3-4588 3-4514
18-130 18-129

842-5781 Bob Anderson 3-5045 3-2268 Jim Watkins 3-5305
18-132 18-135

3-2333 3-4977 3-2372 3-4406
Chris Kraft 18-128 Chuck Bornhauser 18-124

3-4236 3-2037 3-5321 3-5800
Dick Achter 18-141 Rodger Johnson 18-140

3-2368 3-5331 3-2371 3-6445
Val Prophet 18-136 Dave Mathson 18-134

3-2205 3-4877 3-5324 3-5324
Parke Scott 18-125 Glen Nicholas 18-139

3-6290 3-2233 3- 3-5040
Zeke Stocker 18-131 Lee Phillips 18-144

3-4844 3-4789 3-5889
Doug Frank 18-137 Al Madsen 18-146

3-2333 3-5693
Jack Stewart 18-145

3-2383 3-4808 3-2383 3-2783
Rick Later 18-1 Pager 01 Mark Doering 18-2 Pager 02

276-3311 276-3511 689-2395 689-2397
Greyson Phipps 18-3 M. J. Freeman 18-4

3-2383 3-5092
Keith Reeder 18-5

LAND/MOBILE SYSTEM DESCRIPTION

GENERAL INFORMATION

Agency Beaverhead County E.M.S. Corporation

Agency function (i. e. law enforcement,....) Emergency Medical Care in
Beaverhead County, with mutual aid to adjoining counties

Address 309 West Reeder Dillon, Montana

Telephone 683-2833 (Business) 683-2332 (Emergency)

Manager/Communications Keith Reeder

Communications Engineer/Planner/Technician Harvey Lake

Other key personal:

Gale Murray, President

Evelyn Piazzola, Treasurer

Nils Erickson, Vice-President


Art Mante, Treasurer

Attach drawing or map which provides a geographical description of the radio system area.

Identify each system radio site as follows:

 - Base station site

 - Control point site

 - Base station and control point site

Number and prepare a Form 2 for each site.

Does the system have any Mobile/Vehicle equipment?

Yes ☒ No ☐ If yes complete Form 7

Does the system have any Personal/Portable/Pager equipment?

Yes ☒ No ☐ If yes complete Form 8 and attach

SITE IDENTIFICATION AND DESCRIPTIONDate 5/7/81Organization Beaverhead County Law Enforcement CenterSite # 1 Type of site DispatchAddress and/or landmark Courthouse, Bannack Street, Dillon, MontanaLatitude (degrees, minutes, seconds) 45⁰ 12' 57"Longitude (degrees, minutes, seconds) 112⁰ 37' 29"Ground height above mean sea level (feet) 5100'

1. Does the site have base station equipment?
Yes ☒ No ☐ If yes complete Form 4 for each basestation and attach.
2. Does the site have radio control points?
Yes ☒ No ☐ If yes complete a Form 5 and attach.
3. Does the site have one or more towers?
Yes ☒ No ☐ If yes complete a Form 3 for each site tower and attach.
4. Does the site have provisions for emergency power?
Yes ☒ No ☐ If yes complete Form 6 and attach.

5. Site Description

Prepare a sketch of the site and use the above data to identify and cross reference the towers, antenna, base station number, and so on.

Include: Site Ownership Beaverhead CountyShared use Yes ☒ No ☐Site access road condition PavedType of structure ConcreteSize of structure 100' x 100'Room for expansion (within existing structure)
Yes ☒ No ☐

Planned site changes? (Explain)

SITE TOWER DATATower # 1 Located on site # 1Manufacturer Rohn - 50' Type/Model _____Ownership Beaverhead CountyGuyed Yes ☒ No ☐ at eves, 20' levelWindload (pounds per sq. feet) unknownType of lighting None Painted N/A (Galvanized)Type of lighting switch (manual, automatic) N/A

Location of antenna(s) on tower (provide sketch and number each antenna)

Name of nearby airport Beaverhead County AirportDistance (feet) 26,400' Direction N.E.History of lighting damage? Yes ☐ No ☒
If yes explain (grounding, soil, type,...)Tower Sketch

See Attached

BASE STATION AND ANTENNA DATABase Station # 1 Located at Site # 1Manufacturer Motorola Model L43BBB1190DM S/N 28011CC0042Power 45 Watt No of Channels 4 Age 3 yrs Cost ~\$3500Inventory No. _____ Modulation 20F3Purchased with grant funds? Yes ☐ No ☒

Indicate if LEAA, HEW, DOT, DCPA, or other agency funding _____

Function/Operational use County High band repeater systemMaintenance history Nothing exceptional

Channel Designator	F ₁	F ₂		
FCC Call Sign	KLV872	WCU966		
Simplex/Duplex	Simplex	Simplex		
Frequency: Base	155.805	155.100		
Base Rec	155.805	155.805		
Tone Squelch Type	NO	NO		
Frequency TX				
Rec				
Control Methods(s)				
Local	Local	Local		
Wireline				
Radio				
Repeater				
Control point site(s) & number				
Mobiles on Channel	EMS - 3	Others 40+		
Portables on Channel	EMS -10	Others - ?		

Antenna # 1 ³ (See Form 12) Located on tower # 1Manufacturer Phelps Dodge Model _____Gain (Decibels) 0 D.B. Type Quarter wave baseHeight above ground (feet) 35' Total height above mean sea level 5135'

Directional Yes ☐ No ☒ Omni

If yes state direction _____

Wind Load (pounds per square foot) UnknownPropagation data available Yes ☐ No ☐ ?

Studies

User Information

Key people

Transmission Line Data:

Manufacturer _____ Model RG8Size 3/8" Type Jacked CoaxLength (feet) 100' Type connector PL259

May use form to show cavities, filters None

CONTROL POINT DATA

Site # 1

Control Point #	1	2	3		
Function (Police, H/W...)	WAH92	KXK427	KLV872		
Control point for:					
o Base Station #					
o Located at site #	Pipe Organ	Maurer	Maurer		
Control Equipment Description					
o Full console	Full Console		DC Consolette		
o Desk top consule					
o Desk set					
o Hand set					
o Other (Explain)					
Control Equipment type					
o Local	Radio				
o Remote					
o Radio					
o Repeater					
Control Equipment Mode					
o DC	DC				
o Tone					
o DC/Tone					
o Other					
Manufacturer					
o Model #	Motorola		Motorola		
o S/N	Modcom		L43BBB190DM		
o Inventory #					
o Age	5 Years				
o Maximum Cont.					
o Chan. Available					

Control Point(s) Description

o Sketch the present dispatch area facility to include:

- 1) dimension
- 2) equipment location
- 3) air conditioning?
- 4) physical security?
- 5) status board used?
- 6) logging recorder?

Yes ☒

Yes ☒

Yes ☐

Yes ☐

No ☐

No ☐

No ☒

No ☒

Type _____

Type _____

o Model _____

o No. of channels _____

- 7) time stamp used? _____

Yes ☐No ☒

In use _____

Type _____

Planned Modification/Expansion (i.e. computer aided dispatch, new console,...)
Explain.

EMERGENCY POWER EQUIPMENT

Describe the type of emergency power equipment used ONAN 30 SK Model #
30 05k 3R/9447A

Electrical capacity (kilowatts) 37.5

Automatic start and load transfer Yes ☐ No ☒

Describe the type of fuel and the storage system Gasoline

Does the fuel storage system meet fire regulations and other safety standards? Yes ☒ No ☐

Is the power equipment in a separate room from the communication gear? Yes ☒ No ☐

If no, are there any electrical interference, corrosion, vibration, or heat problems?

Yes ☒ No ☐

Describe the cooling and ventilation facilities located outside (has engine heater).

Is the emergency power equipment run and checked periodically? Yes ☒ No ☐

If yes, is a log of the test kept? Yes ☒ No ☐

Is a battery float system used? Yes ☒ No ☐

If yes, what is the voltage? 130 V

Amphr capacity?

SITE IDENTIFICATION AND DESCRIPTIONDate 5/7/81Organization Barrett HospitalSite # 2 Type of site Hospital base station - Medical ControlAddress and/or landmark 1260 S. Atlantic Dillon, MontanaLatitude (degrees, minutes, seconds) 45⁰ 12' 28"Longitude (degrees, minutes, seconds) 112⁰ 38' 17"Ground height above mean sea level (feet) 5120

1. Does the site have base station equipment?

Yes ☒ No ☐ If yes complete Form 4 for each basestation and attach.

2. Does the site have radio control points?

Yes ☒ No ☐ If yes complete a Form 5 and attach.

3. Does the site have one or more towers?

Yes ☒ No ☐ If yes complete a Form 3 for each site tower and attach.

4. Does the site have provisions for emergency power?

Yes ☒ No ☐ If yes complete Form 6 and attach.

5. Site Description

Prepare a sketch of the site and use the above data to identify and cross reference the towers, antenna, base station number, and so on.

Include: Site Ownership Barrett HospitalShared use Yes ☐ No ☒Site access road condition PavedType of structure BrickSize of structure 50' x 100'

Room for expansion (within existing structure)

Yes ☒ No ☐

Planned site changes? (Explain)

SITE TOWER DATA

Tower # 1 Located on site # 2

Manufacturer Rohn - 25' Type/Model _____

Ownership Beaverhead County

Guyed Yes ☒ No ☐ Anchored to Building at 12'

Windload (pounds per sq. feet) Unknown

Type of lighting None Painted N/A (Galvanized)

Type of lighting switch (manual, automatic) N/A

Location of antenna(s) on tower (provide sketch and number each antenna)

Name of nearby airport Beaverhead County Airport

Distance (feet) 29,040 Direction N.E.

History of lighting damage? Yes ☐ No ☒
If yes explain (grounding, soil, type,...)

Tower Sketch

See Attached

BASE STATION AND ANTENNA DATA

Base Station # 1 Located at Site # 2Manufacturer Motorola Model I43BBB1190DM S/N 280HBG0064Power 45 Watt No of Channels 4 Age 3 years Cost \$1200Inventory No. _____ Modulation 20E3Purchased with grant funds? Yes ☐ No ☒

Indicate if LEAA, HEW, DOT, DCPA, or other agency funding _____

Function/Operational use Medical Control for field ambulanceMaintenance history No exceptional

Channel Designator	1	2	3	4
FCC Call Sign	KLV873	WCU 968	KQF 612	KUF 612
Simplex/Duplex	Simplex	Simplex	Simplex	Simplex
Frequency: Base	155.805	155.100	155.230	155.340
Base rec	155.805	155.805	155.230	155.340
Tone Squelch type	DTMF	DTMF	DTMF	DTMF
Frequency TX				
Rec				
Control Methods(s)				
Local	Local	Local	Local	Local
Wireline				
Radio				
Repeater				
Control point site(s) & number				
Mobiles on Channel				
Portables on Channel				

Antenna # 1 (See Form ³ 1-2) Located on tower # 1Manufacturer Andrew Model 161-1Gain (Decibels) 3 D.B. Type OmniHeight above ground (feet) 26' Total height above mean sea level 5146'

Directional Yes ☐ No ☒

If yes state direction _____

Wind Load (pounds per square foot) Unknown

Propagation data available Yes ☐ No ☐ ?

Studies

User Information

Key people

Transmission Line Data:

Manufacturer _____ Model RG8

Size 3/8" Type Foam Filled

Length (feet) 100' Type connector PL259

any use from the show circuit, filters None

BLANK DUE TO CONFUSION
ON THIS FORM
CONTROL POINT DATA

Site # _____

Control Point #					
Function (Police, H/W...)					
Control point for: o Base Station # o Located at site #					
Control Equipment Description o Full console o Desk top consule o Desk set o Hand set o Other (Explain)					
Control Equipment Type o Local o Remote o Radio o Repeater					
Control Equipment Mode o DC o Tone o DC/Tone o Other					
Manufacturer o Model # o S/N o Inventory # o Age o Maximum Cont. o Chan. Available					

Control Point(s) Description

o Sketch the present dispatch area facility to include:

- 1) dimension
- 2) equipment location
- 3) air conditioning? Yes ☐ No ☐ Type _____
- 4) physical security? Yes ☐ No ☐ Type _____
- 5) status board used? Yes ☐ No ☐ Type _____
- 6) logging recorder? Yes ☐ No ☐
 - o Model _____
 - o No. of channels _____ In use _____
- 7) time stamp used? Yes ☐ No ☐ Type _____

Planned Modification/Expansion (i.e. computer aided dispatch, new console,...)
Explain.

EMERGENCY POWER EQUIPMENT

Describe the type of emergency power equipment used ONAN 45 PM Model #
45 OEM - 15 B/9288G

Electrical capacity (kilowatts) 45 KW

Automatic start and load transfer Yes ☐ No ☒

Describe the type of fuel and the storage system LPG

Does the fuel storage system meet fire regulations
and other safety standards? Yes ☒ No ☐

Is the power equipment in a separate room from the
communication gear? Yes ☒ No ☐

If no, are there any electrical interference,
corrosion, vibration, or heat problems? Yes ☒ No ☐

Describe the cooling and ventilation facilities _____

Is the emergency power equipment run and checked
periodically? Yes ☒ No ☐

If yes, is a log of the test kept? Yes ☒ No ☐

Is a battery float system used? Yes ☒ No ☐

If yes, what is the voltage? 50 KVA
Amphr capacity? _____

SITE IDENTIFICATION AND DESCRIPTIONDate 5-9-81Organization Highway Patrol - WisdomSite # 3 Type of site Law Enforcement - Ambulance DispatchAddress and/or landmark Mobile Home east end of townLatitude (degrees, minutes, seconds) 45° 36' 40" N.Longitude (degrees, minutes, seconds) 113° 26' 20"Ground height above mean sea level (feet) 6050

1. Does the site have base station equipment?

Yes ☒ ^{non-F.M.S.} No ☐ If yes complete Form 4 for each basestation and attach.

2. Does the site have radio control points?

Yes ☐ No ☒ If yes complete a Form 5 and attach.

3. Does the site have one or more towers?

Yes ☒ No ☐ If yes complete a Form 3 for each site tower and attach.

4. Does the site have provisions for emergency power?

Yes ☐ No ☒ If yes complete Form 6 and attach.

5. Site Description

Prepare a sketch of the site and use the above data to identify and cross reference the towers, antenna, base station number, and so on.

Include: Site Ownership Highway PatrolShared use Yes ☐ No ☒Site access road condition Paved to dirt drivewayType of structure Mobile HomeSize of structure 12' x 60'

Room for expansion (within existing structure)

Yes ☐ No ☒

Planned site changes? (Explain)

SITE TOWER DATATower # 1 Located on site # 3Manufacturer Phone pole Type/Model _____

Ownership _____

Guyed Yes ☒ No ☐

Windload (pounds per sq. feet) _____

Type of lighting None Painted NoType of lighting switch (manual, automatic) N/A

Location of antenna(s) on tower (provide sketch and number each antenna)

Name of nearby airport _____

Distance (feet) _____ Direction _____

History of lighting damage? Yes ☐ No ☐
If yes explain (grounding, soil, type,...)Tower Sketch

BASE STATION AND ANTENNA DATA

Base Station # 1 Located at Site # 3Manufacturer Motorola Model L71EBB3490M S/N SOL519Power 100 Watt. No of Channels 4 Age 2 yrs. Cost _____

Inventory No. _____ Modulation _____

Purchased with grant funds? Yes ☐ No ☐

Indicate if LEAA, HEW, DOT, DCPA, or other agency funding _____

Function/Operational use Law Enforcement

Maintenance history _____

Channel Designator	1	2	3	4
FCC Call Sign	KUU555			
Simplex/Duplex	Simplex	Simplex	Simplex	Simplex
Frequency: Base	39.56	39.82	39.88	39.94
base rec	39.56	39.82	39.88	39.94
Tone Squelch Type	No	NO	NO	No
Frequency TX				
Rec				
Control Methods(s)				
Local				
Wireline				
Radio				
Repeater				
Control point site(s) & number				
Mobiles on Channel				
Portables on Channel				

Antenna # 1 ³ (See Form 12) Located on tower # 1Manufacturer Phelps-Dodge Model _____

Gain (Decibels) _____ Type _____

Height above ground (feet) 60' Total height above mean sea level 6110'

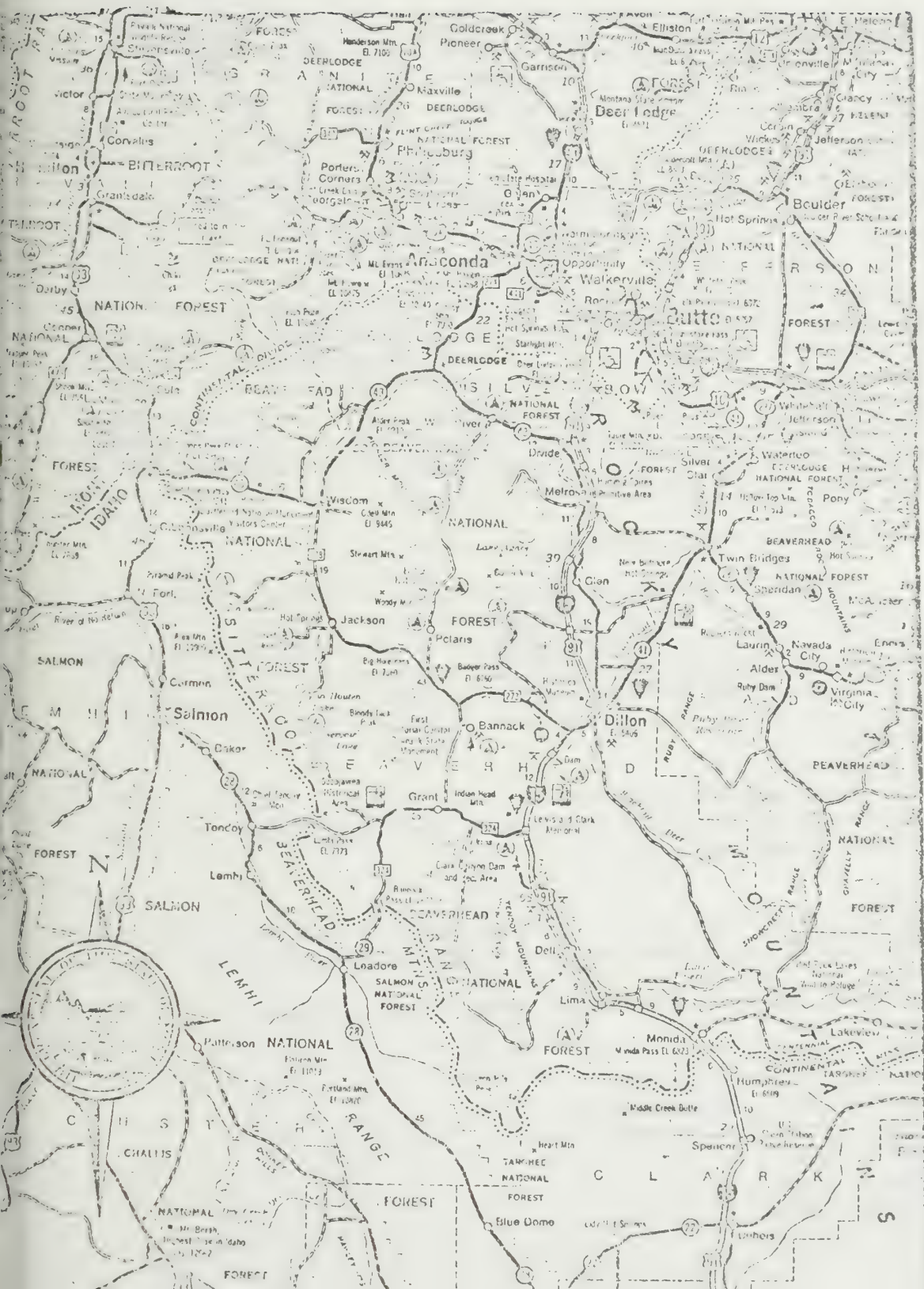
Personal/Portable Equipment

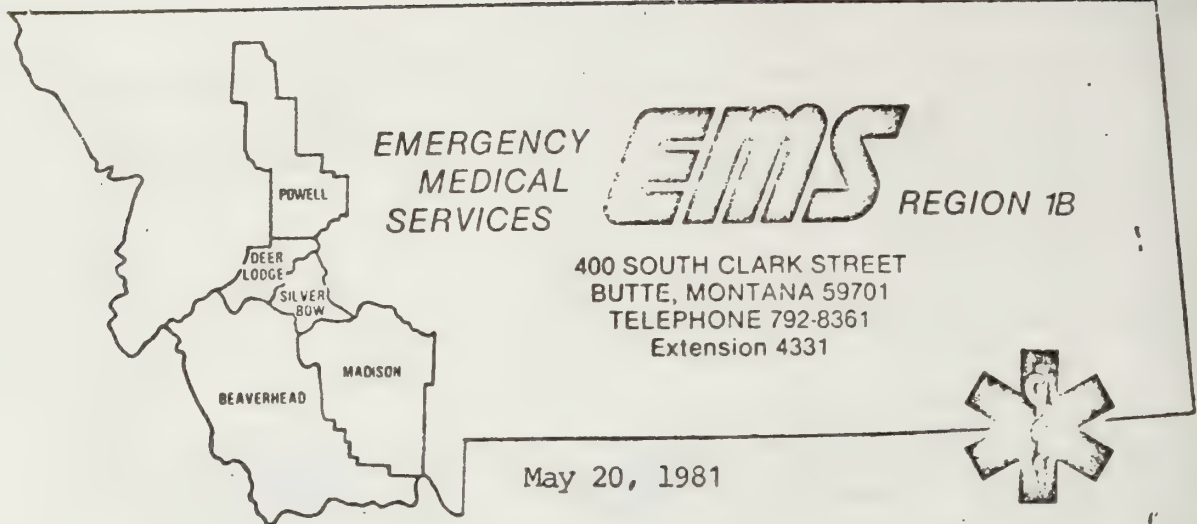
Identification Number	Item	Quantity	Manu	Model	Power	Channel				Frequency			Age	Tone Squelch	Acqui. Date	Cost
						1	4	5	8	9-12	13-16					
Dillon Amb						155.805										
230ACW1066	1	1	Motorola	H3BBU 1144A	5 Watt	155.100							3yrs.	NO	1978	\$650
						155.240										
Dillon Amb						155.805										
230ACW1064	2	1	Motorola	H3BBU 1144A	5 Watt	155.100							1 Yr	NO	1980	
						155.240										
Dillon Amb						155.805										
527ADL0112	3	1	Motorola	SP2728 421	5 Watt	155.100							1 Yr	NO	1980	
						155.240										
Dillon Amb.						155.805										
805100280220	4	1	Motorola	H3BBU 1144A	5 Watt	155.100							1 Yr	NO	1980	
						155.240										
Dillon Amb.						155.805										
230ACW0277	5	1	Motorola	H3BBU 1144A	5 Watt	155.100							1 Yr	NO	1980	
						155.240										
Dillon Amb						155.805										
230ACW0379	6	1	Motorola	H3BBU 1144A	5 Watt	155.100							1 YR	NO	1980	
						155.240										
Dillon Amb (checked out at time of survey)	7	1	Motorola	H3BBU 1144A	5 Watt	155.805							1 YR	NO	1980	
						155.100										
						155.240										
Three additional units are being purchased for the Wise River, Jackson, and Grant (BU's of the same model and configuration as item 7.																

Also available in Dillon are 16 Model-100 pagers for the ambulance and 9 Model-100 pagers for the Hospital. - Location and specifics unavailable at time of survey.

MOBILE EQUIPMENT

Identification Number	Item	Quantity	Manu	Model	Power	Channel				Frequency	Age	Tone Squelch	Acqui. Date	Cost
						1	2	3	4					
Dillon Amb. #18259 MH160J	1	1	Motorola	T73RIN 1190B	100 Watt	39.82					5 Yrs	NO	1976	\$700
Dillon Amb. #18250 F50519	2	1	Motorola	T71BB A2900CA	100Watt	.805 .100 .280					5 Yrs.	NO	1976	\$2000
Dillon Amb. #13250	3	1	Pace	CB 144	5 Watt									
Dillon Amb #18251 #65159	4	1	Motorola	U51HHT 1000A	100 Watt	39.82					20 Yrs			
Dillon Amb #18251	5	1	Cobra	28	5 Watt									
Lima Ambulance	6	1	Motorola	T71BB A2900CA	100 Watt	.805 .100 .280					2 Yrs			
Wisdom Amb 7081406	7	1	GE	Mastr II NC76KAS 66A	100 Watt	39.82					3 Yrs			
Wisdom Amb #1-57698	8		Motorola	CC1038	100 Watt	155.280					7 Yrs			





A.E. Clifford
Telecommunications Project
Room 227
Helena, MT 59601

Dear Cliff:

Please accept the following as a summation of my experience with the "Land/Mobile System Description" reporting form I was asked to evaluate April - May, 1981. It was my task to do a physical inventory of the E.M.S. Communications equipment capability in Beaverhead County. On this behalf I conducted a field survey lasting approximately 12 hours and covering over 350 miles. In this effort, I perceived myself simply as a gatherer of information, rather than an evaluator or technician, since I have had no formal education in either of these roles.

The following were noted as problems in this task:

1. System overlap -- i.e. a lack of definition to "system" parameters
2. Expertise, or lack of it, of interviewer and interviewee. It was evident that most Communications Managers do not fully understand the inner-workings of their system and that a great many systems have internal complexities that could only be understood by a communication engineer and then only if he had total access to the system.
3. Terminology
4. Enormity of task
5. Physical inaccessability of sites
6. Interpretation and practical utilization of data gathered, an explanation to local personnel.

Recommendation:

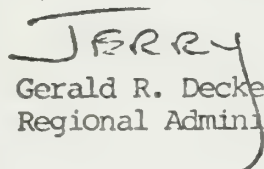
1. Revise and clarify the form -- it is basically a good tool, but effort must be made to gain common ground and eliminate vague terminology, including:
 - a. Re-number forms to provide for better field utilization
 - Form 1 Same
 - Form 2 Same
 - Form 3 Base Station Data
 - Form 4 Radio Control Points
 - Form 5 Tower and Antenna Data
 - Form 6 Same
 - Form 7 Same
 - Form 8 Same

5. Identify specific goals and use for this data, hopefully providing enough motivation for local cooperation, recognizing the stress put on a system to gather this data. Even though the current effort was to evaluate a data-gathering methodology, if we cannot provide a reason for doing it, the effort will be rather limited and, as evidenced by this experience, meaningless.
6. Decide exactly what data is necessary to meet these goals and limit the form to that data.

I hope this presents some insight into my experience with this form. I do feel my lack of technical expertise was valuable in that it provided a mechanism to test the form in the least expensive way. If I had been successful in gathering the necessary information, it would have been a simple matter to circulate the form to each county agency. Since such is not the case, it is now apparent that the form must be dramatically revised or the interviewer must be technically sophisticated. My primary concern was the use to which this data could be put. For example, as an E.M.S. Administrator, if the results of this study could have expressed the perceived capabilities of this county vs. the existing capabilities vs. the recommended capabilities for this county, it would have been well worth my while to provide whatever assistance necessary in this task. This, of course, would require a great deal more interpretative capability on the part of your project. It would also provide a reason for doing all this work.

In closing, I would like to express my appreciation for the efforts you are making. This is indeed a necessary project and one which requires a great deal of organizational time and thought. Thank-you for this opportunity to help. Please call if I may be of any further assistance.

Respectfully Submitted,


Gerald R. Decker
Regional Administrator

MEMBERSHIP LIST
LAND MOBILE TASK FORCE

(NEW)

51

CHAIR: Alden E. Clifford III, Montana Telecommunications Project Administrator

NOTIFY: Include all MTAC members on mailing list.

Becker, Randy
Yellowstone County Sheriff's Office
Courthouse
Billings 59101

Froehlich, Ray J.
Missoula County Sheriff
Missoula 59801
- 721-5700

Bird, Robert H.
Fish, Wildlife & Parks
449-2452

Fuller, Dan
Communications Division
Dept. of Administration

Boster, Kenneth R.
Emergency Medical Service Bureau
Dept. of Health
836 Front St.
Helena 59620
449-3895

Gertzner, Jean; Sheriff
Glacier County
Cut Bank 59427
873-2711

Brockway, Al
Chiefs of Police Assn.
524 6th
Helena 59601

Gilbertson, Carlyn
Disaster and Emergency Serv. Bureau
836 Front St.
Helena 59601
449-3034

Brown, Gary, Administrator
Forestry Division
Dept. of Natural Resources
2705 Spurgin Rd.
Missoula 59801

Gildroy, Ralph
Montana Health Systems Agency
324 Fuller
Helena 59601
443-5965

Clark, Robert A.
Design Section Supervisor
Engineering Bureau
Dept. of Natural Resources
Helena 59620
449-2864

Graham, Les
Dept. of Livestock
449-2044

DeWolf, George
Disaster and Emergency Serv. Bureau
836 Front St.
Helena 59620
449-3034

Griffith, Co. Robert J.; Chief
Montana Highway Patrol
Scott-Hart Bldg.
449-3000

Dye, Dale E.
Ravalli County Sheriff
Courthouse
Hamilton, MT 59840

Gwaltney, Robert D.; Chief
Communications Bureau
Dept. of Highways
449-4604

Figgins, Dan
Bozeman Fire Department
Bozeman 59715
586-6219

Haraseth, Ronnie A.
Dept. of Highways
449-3603

Hite, Robert
Federal Emergency Management Agency

Denver, Colorado
303-234-2561

Huber, Ted
620 So. 16th
Bozeman 59715
994-3918

Hudson, Russel K.
P.O. Box 101
Virginia City 59755
843-5351

Hunt, H. David
ITS
325 Broadway
Boulder, Colorado 80303
303-497-5734

Korn, Arthur J.
Mt. Volunteer Fireman's Assn.
1916 So. Washington
Butte 59701
723-4691

Majerus, Larry
Division of Motor Vehicles
Dept. of Justice
Scott-Hart Bldg.
Helena 59620

Mareland, Svend
Sweet Grass County Sheriff
Big Timber 59011
932-2151

McKiernan, Bill, Asst. Admin.
Law Enforcement Division
Dept. of Fish, Wildlife & Parks
Helena 59620

Mitchell, Mike; Chief
Hardin Central Dispatch
Box 333
Hardin 59034
665-1067

Moon, Gareth C.
Commissioner of Lands
Dept of Lands
Helena 59620

Morse, Daniel, Chairman
Hill County Commissioners
Courthouse
Havre 59501

Murry, Bill
Cascade County Disas. & Emerg. Serv.
Courthouse
Great Falls 59401

Murry, Kevin
Cascade County Communications Division
Room 104, Courthouse Annex
Great Falls 59401
761-6700 ext. 280

Parrent, Norman R., Director
Disaster and Emergency Services
Big Horn County
P.O. Box 202
Hardin 59034

Pfau, Sabe
Missoula Chief of Police
Missoula 59801
721-1150

Potter, Kim S., Director
Flathead County Civil Defense
Box 1076
Kalispell 59901
755-5300 #3461

Peters, Jack W.
Forestry Division
Dept. of Natural Resources
2705 Spurgin Rd.
Missoula 59801
728-4300

Ramsey, Patricia
Box 1035
Kalispell 59901
755-2121

Rierson, Al
Flathead County Sheriff Office
Kalispell 59901
755-3691

Salazar, Max, Chief
Safety & Health Bureau
Workers' Compensation Division
815 Front Street
Helena 59620
449-3402

Schultz, Harvey E.
Sanders County Sheriff
Box 248
Thompson Falls 59873
827-3584

Sedgwick, Jack
Dept. of Livestock
449-2044

Stefanic, Martin
Kalispell Police Department
City Hall
Kalispell 59901
755-2121

Thorstad, Merle
Blaine County Commissioner
Chinook 59523
322-3250

Toftely, Allen R., Asst. Admin.
Highway Traffic Safety Division
Dept. of Community Affairs
Helena 59620

Welch, Ed
Bozeman City Fire Department
Bozeman 59715
586-6219

Whitling, Ted, Administrator
Communications Division

Williams, Doug, Deputy Sheriff
Choteau County
Ft. Benton 59442

Young, Homer
Communications Division

Jemison, Commissioner Philip E.
Star Route
Drummond, MT 59832

Martin, Terry
301 So. Park
Drawer 10014
Federal Bldg.
Helena 59601
442-6607

Utilizing this numbering system, the following recommendations are made for individual forms:

- b. Form 1 -- Define parameters of "system" and "Lead agency"
- c. Form -- OK, except for changes in form numbers
- d. Form 3 -- Base station data - Clarify or eliminate the following terms:

- Inventory?
- Modulation?
- Maintenance hx?
- Tone Squelch Type?
- Control Methods?
- Cavities?
- Filters?
- Studies user information?

Relocate the antenna and transmission line information to Form 5.

Add a section for license information -- i.e. what frequencies and is it current?

Re-evaluate need for cost questions- are they necessary and, if so, what justification is to be given local agencies?

- e. Form 4 - Radio Control Points - Revise entire form to make understandable to lay-interviewer and interviewee.
- f. Form 5 - Tower and Antenna Data - Eliminate "Gain", "Type", and "Wind Load" -- "Model" should provide this information.
Include space for tower height.
Provide diagram on Form of Rohn-Type Tower, which may be adjusted to various scales, allowing for rapid field expression of antenna and tower.
- g. Form 6 -- OK
- h. Form 7 -- Add a column designating the storage location of all portable/mobile equipment. Increase the space allowed for Model # and frequency designation.
- i. Form 8 -- Include location data.

Due to the complexity of this information and the variability of technical language, a quick-reference explanation booklet for this entire form would greatly facilitate this process. In addition, the capability to readily program this data into a computer would make effective utilization more plausible. This, of course, would require radical format changes.

- 2. Assure consistency and credibility of interviewer and, as much as possible, interviewee. This would preclude any mailing of forms to be filled out by unknown individuals. The interviewer must be completely oriented to the needs and purpose of the form and be technically sophisticated enough to meet those needs. In addition, for the amount of time and effort involved, the interviewer must receive adequate compensation.
- 3. Realize the enormity of the task and commit sufficient resources to accomplish it in a reasonable time.
- 4. Do all high sites in August.

YOUR NAME _____

ATTACHMENT (13)

ORGANIZATION _____

LAND MOBILE TASK FORCE
NEEDS ASSESSMENT OVERVIEW

1. How many personnel are associated in your shop with land mobile operations, including maintenance? (in FTEs)
2. What is their approximate average salary? -
3. What is the approximate annual total of your personnel costs for land mobile operations, including maintenance?
4. Does your agency perform its own land mobile radio maintenance and repair?
If not, please note who does.
☐ Yes ☐ No _____
5. What is the approximate annual total expended by your organization for land mobile equipment replacement?
6. How would you classify the age of your existing land mobile radio equipment?

1-5 Yrs.	_____ %	}	Should total 100%
6-10 Yrs.	_____ %		
11-20 Yrs.	_____ %		
7. How soon will you require major equipment replacement?

1 Year	_____
2 Years	_____
3 Years	_____
4 Years	_____
5 Years	_____
Over 5 Years	_____
- 7A. What equipment do you visualize replacing in the above effort?

3. How much of your system, in terms of cost, will be replaced in the above effort?

0-20% _____

21-40% _____

41-60% _____

61-80% _____

81-100% _____

Please indicate the frequency band in which your primary system is licensed to operate.

☐ VHF - Citizen's Band

☐ VHF - Low Band

☐ VHF - High Band

☐ UHF

4. Does your agency experience radio coverage and/or interference problems in your land mobile radio system? If yes, please explain. ☐ Yes ☐ No

5. Does existing state technical and maintenance support meet the needs of your agency? ☐ Yes ☐ No If no, please explain.

6. Could coordination and interface with other agencies be improved to help you operate more efficiently? ☐ Yes ☐ No If yes, please explain.

12. Please add any additional issues which may be reducing the effectiveness of your land mobile radio system.

Please return by July 13th to:

Montana Telecommunications Project
Room 227 Mitchell Building
Capitol Complex
Helena, MT 59620

LAND MOBILE TASK FORCE
FACILITIES PROJECTION

	<u>Year 1</u>	<u>Year 2</u>	<u>Year 3</u>	<u>Year 4</u>	<u>Year 5</u>
SYSTEMS	<u>1</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>2</u>
SITES	<u>23</u>	<u>24</u>	<u>25</u>	<u>25</u>	<u>26</u>
TOWERS	<u>12</u>	<u>12</u>	<u>14</u>	<u>14</u>	<u>15</u>
POLES	<u>10</u>	<u>11</u>	<u>12</u>	<u>12</u>	<u>13</u>
BASE STATIONS	<u>45</u>	<u>48</u>	<u>48</u>	<u>50</u>	<u>50</u>
ANTENNAS	<u>80</u>	<u>83</u>	<u>83</u>	<u>85</u>	<u>85</u>
CONTROL POINTS	<u>180</u>	<u>185</u>	<u>185</u>	<u>190</u>	<u>190</u>
EMERGENCY POWER EQUIPMENT	<u>22</u>	<u>23</u>	<u>24</u>	<u>25</u>	<u>25</u>
HAND-HELDS	<u>75</u>	<u>80</u>	<u>90</u>	<u>100</u>	<u>110</u>
MOBILE RADIOS	<u>860</u>	<u>950</u>	<u>975</u>	<u>1000</u>	<u>1100</u>

SECTION IV
DATACOMMUNICATIONS

SECTION IV

DATA COMMUNICATIONS

The Telecommunications Project, as mentioned earlier, is charged with the three-fold task of establishing (A) a general inventory or overview, (B) a needs assessment, and (C) a comprehensive plan. In keeping with these goals in the area of data communications, the Project worked extensively with the Data Communications Task Force (see attachment one), the Computer Services Division (CSD) within the State Department of Administration, and the Institute for Telecommunications Sciences (ITS) within the U.S. Department of Commerce.

While precise equipment level ascertainment for all organizational entities involved in data communications was far beyond the scope of the Project, a general overview of the state agency equipment was developed by CSD and is provided in attachment two. Several non-state entities also appear on this attachment although they are not organizations belonging to the State of Montana per se, they appear as RJE (remote job entry) terminals to the central processor at Helena. (MSU's Sigma 7, Western's DEC 1160, and U. of M.'s DEC 20 are examples of this situation). This attachment does not reflect data communication equipment at educational institutions within the state to any degree of detail, nor does it show equipment located at the city or county level. However, it does provide an adequate conception of the most extensive network in the State and, according to CSD's estimates, reflects the location of approximately 60% of existing equipment in the State. A summary of the attachment shows that the state government currently (as of March, 1981) possesses 4 distributive processors, 27 remote job entry terminals and 357 terminals, for a total of 388 devices. Bearing CSD's estimate of their total system percentage in mind, this extrapolates to roughly 650 data processing/communicating devices statewide.

The Project also developed a methodology for the State to ascertain data communications equipment levels with a fair degree of precision, under the guidance of HB827. This methodology is illustrated in attachment three in detail; however, in summary, the methodology allows the State to obtain a detailed overview of its data communication equipment, including facsimile machines, teletypes, circuits, modems, and any other input/output devices. Further, the methodology, through analysis of distant end connection points, will allow the State to discern data communication networking patterns, and therefore, through circuit sharing, multiplexing, and other techniques, lower the cost of data communications within the State if at all possible.

Through interaction with the Data Communications Task Force, the Project was also able to conduct a needs assessment for data communications users in the State. This is generally shown in attachment four: However, an explanation of many of these issues is required. One of the issues facing data communications personnel in the State is the concept of local distribution costs. Data communication at the local level is accomplished by the leasing of circuitry from the common carrier (usually Bell system). There appears to be only one alternative to this, and that is for the user to wire the site themselves. At the time of this writing, Eastern Montana College has completed their on-site wired network, MSU is in the process of doing so, and Northern Montana College is considering doing so.

Another issue for data communications users is the fact that many users have a requirement for unloaded multi-point circuits: This, in translation to layman's terms, is somewhat complex. An unloaded circuit is a circuit that has had its loading coils removed, and therefore allows data to be

transmitted over it at a rate higher than usual (9,600 BITS per second versus 2,400 BITS per second, for instance). A multipoint circuit is a circuit that connects more than one point of reception. This issue refers to State needs to transmit data very quickly to more than one location. As attachment four notes, Bell has, at present, no tariff pending regarding this type of service and no plans to file such a tariff.

Another major issue in data communications revolves around the difficulty of protocol incompatibilities between various terminals and various other central processors. Without going into great technical detail, this issue stems basically from the fact that IBM central processors and terminals "speak a language" known as SNA (Systems Network Architecture). Other manufacturers of data processing equipment, such as DEC and WANG, "speak a language" known as X.25. These two protocols differ enough so that communication between a X.25 terminal and a SNA processor is extremely difficult, perhaps to the point of total non-communication.

The solution, then, is to have terminals and processors all "speaking the same language" in order to utilize the State's data communicating and data processing capabilities to the fullest. There are two possible methods to accomplish this. The first is to control the procurement of all new data transmitting devices. This option is potentially extremely volatile insofar as the split in data communication organizations lies between the state agencies, the educational institutions, and local governments. Major legislative changes would be required, for instance, to make local governments and educational institutions coordinate all data communications equipment procurements with the state government. Even if this could be accomplished, which is doubtful,

the Project has estimated that a time-frame of approximately fifteen years would be required before the final phase-out of "old protocol" equipment could be completed. This scenario also tends to leave "old protocol" equipment gradually more and more out of the data communication picture as "new protocol" equipment levels increase.

The second option to settle the issue of incompatible protocols is to allow the marketplace to solve the difficulty for the State. If one considers that Montana is a micro-cosm insofar as data communications is concerned, it must certainly be true that the same protocol incompatibilities exist throughout the data processing world, and so they do. IBM, the creator of SNA, is currently, according to various industry trade journals, considering shifting to an X.25 compatible protocol. This shift is expected to take place within the next three years, and is evidenced by the fact that IBM uses X.25 compatible protocols in their European markets today. Therefore, the protocol incompatibility issue may resolve itself. There appears to be enough user pressure world-wide to motivate manufacturers to work together to solve this problem.

Another major issue confronting data communication users is the lack of a coordinating body as regards data communications problems and difficulties. It is perhaps significant that the data communications users perceive the need for an overall regulating body; this is the first step toward bringing order to the situation. There are, again, two ways to solve this problem. The first is to establish a steering committee comprised of the various user groups. Difficulties inherent in this approach include the facts that all members of the steering committee will represent their own vested interests, and that getting a committee to agree on a single course of action contrary

to the interests of individual members of the committee is difficult, indeed. The second method available to solve this issue is the creation of a centralized approach. The difficulties involved in this solution are traditional: It is extremely easy for a single individual in charge of this type of decision-making to be arbitrary and capricious in the establishment of policy. A "centralized approach" individual must consider the needs of the users in order to function adequately.

Interestingly enough the two remaining issues of concern to data communications users closely paralleled the Project's grant requirements of establishing a general inventory. These two issues were the completion of a physical inventory of data communication equipment and identification of the existing user groups. The Project feels that both of these can be accomplished through the use of the physical equipment inventory form provided as attachment three. Some additional thoughts along this line, however: This physical inventory should probably be accomplished under the auspices of HB827; it should coordinate closely with the Computer Services Division to avoid duplications of effort and equipment; it should identify and utilize any other data bases regarding physical equipment; and it should devise and institute a volatile data base for this physical inventory, preferably to be maintained by a centralized point, perhaps the Governor's office or through the Communications Division. The completion of this physical equipment inventory, if handled properly, should also solve the issue of identification of the user community.

In addition to the above needs assessment research, the Project, through interaction with the Institute for Telecommunication Sciences, developed a detailed needs assessment methodology for data communication users. This appears as attachment five. This document, however, proved to be unwieldy

in many respects and was redone by the Project pursuant to input from the Data Communications Task Force and the Computer Service Division. The revised needs assessment methodology for data communications is included as attachment six. The fundamental difference between these two documents, without going into great detail, is that the revised version of the data communications needs assessment is briefer, more concise, and more directed toward actual needs assessing than is the original. Furthermore, much extraneous material not directly applicable to the Montana situation has been deleted from the first version of the document, and is not included in the revised edition. The Project feels that the revised edition, if carried out under HB827, would provide the State with a much more detailed picture of data communications needs than it presently possesses.

Insofar as facilities projections are concerned, the Project relied heavily upon Computer Services Division's figures, since they provided estimates encompassing all agencies attached to the host processor at Helena. Again, CSD estimates that these figures illustrate roughly 60% of all data communications/data processing equipment state-wide. CSD's figures show steady increases within the next five years. Details of this increase are illustrated in attachment seven; however, a summary of this information reveals that CSD expects input/output (I/O) terminals to increase 250 percent between 1981 and 1985, from 400 devices to 1000 devices. Batch transmission terminals are expected to increase 240 percent from 25 devices in 1981 to 60 devices in 1985. Modems will show a similar increase of 250 percent, from 200 to 500. Concentrators are expected to increase from their present level of none to five devices over the same time frame. Both dedicated and dial-up circuits show similar trends of expected rapid growth, as do message switchers. The user community, in keeping with the equipment trends is also expected to increase, approximately 50%, from roughly forty user groups at present to

sixty groups within five years. This level of growth in the data communications area roughly 200 percent overall, will also be shared by the educational and local government sectors.

The cost of data communications is illustrated in detail in attachment eight. In summary, CSD estimates an expenditure at present of roughly \$670,000 per annum in lease costs of lines, modems, controllers, and terminals. However, this cost is expected to rise sharply within the next two years, to an estimated level of \$2,370,000, due to system expansions and increased lease costs. This increase, (roughly 350%) can, according to CSD estimates, be reduced considerably, on the order of 30-40% of the 1983 total cost, simply by employing the long-range planning techniques postulated by the Project, such as resolution of protocol incompatibilities, avoidance of redundant equipment, and avoidance of redundant circuitry. This calculates to roughly \$680,000 of potential savings in data communications alone, as an estimate. However, this potential savings notwithstanding, the State would certainly stand to do nothing but gain enormously by identifying equipment levels and user needs in data communications, and by resolving the data communications issues identified by the Project.

ATTACHMENTS

0. GLOSSARY
1. DATA COMMUNICATIONS TASK FORCE
2. STATE MAP, CSD EQUIPMENT
3. PHYSICAL EQUIPMENT INVENTORY (MIS FORM)
4. DATA COMMUNICATIONS TASK FORCE ISSUES AND ALTERNATIVES
5. INITIAL DRAFT, DATA COMMUNICATIONS NEEDS ASSESSMENT
6. REVISED EDITION, DATA COMMUNICATIONS NEEDS ASSESSMENT
7. FACILITIES PROJECTION, DATA COMMUNICATIONS
8. COST PROJECTIONS, DATA COMMUNICATIONS

MEMBERSHIP LIST
DATA COMMUNICATIONS TASK FORCE

(NEW)
ATTACHMENT ONE

35

R: Alden E. Clifford III, Montana Telecommunications Project Administrator

FY: All MTAC members

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243-2883

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443-1010

Cheetham, James A.
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Commissioner of Insurance
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Lucke, Lou
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126-3042

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Dept of Lands
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449-2074

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Miles City Community College
Miles City 59301 *2715 Dickinson*
232-3031

Peckinpugh, Robert O., Jr.
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Property Assessment Division
Mass Appraisal Bureau
449-2808

Rizza, Jim, EDP Specialist
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Dept. of Community Affairs
Helena 59620
449-3010

Schultz, Harvey E.
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827-3584

Sheline, Dennis, Chief
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Svienson, Jim
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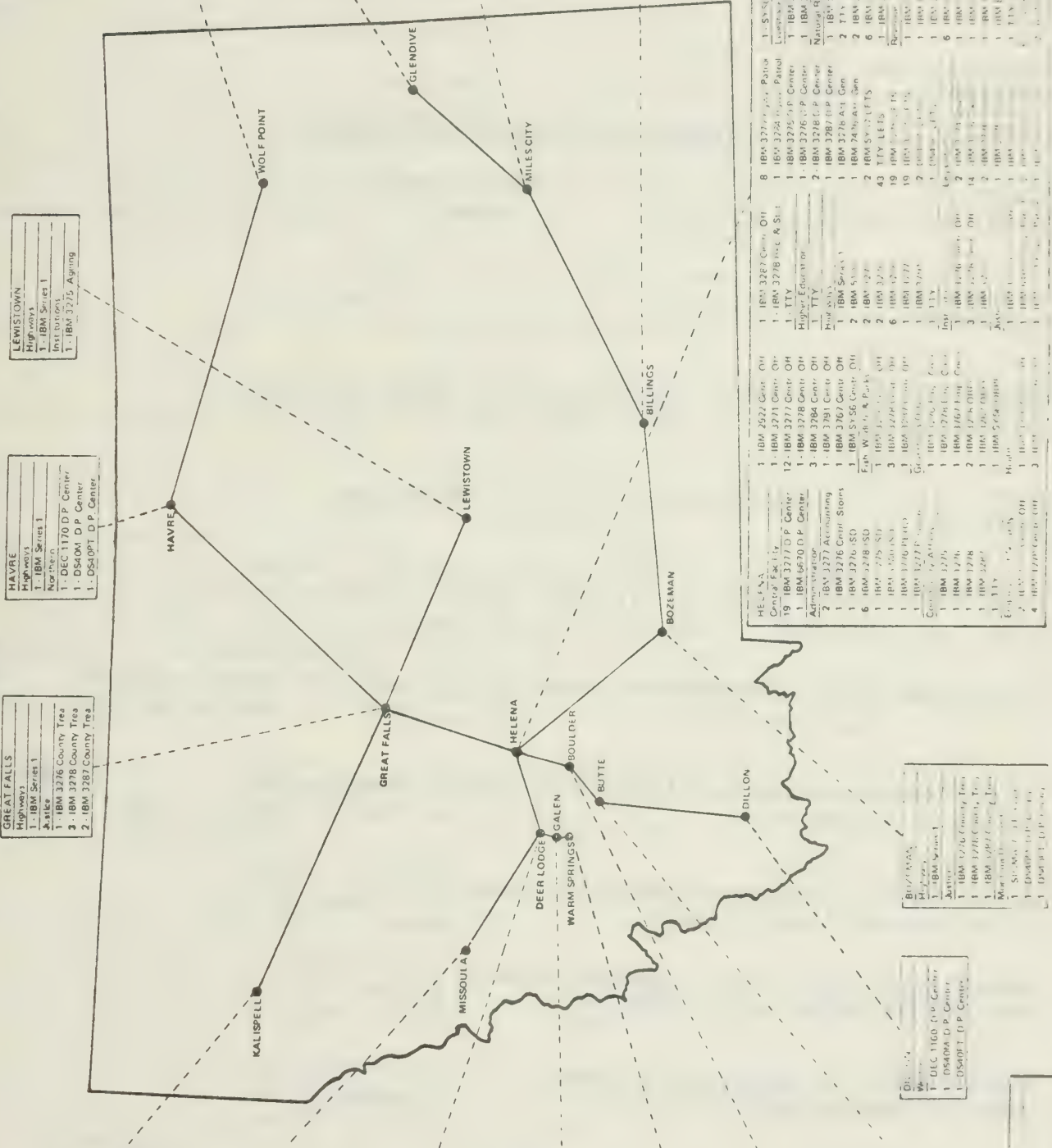
Trevor, Mike, Administrator
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449-2700

Tucker, Rick
State Auditor's Office
Securities Division
Rm. 270, Mitchell Bldg.
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McGee, Troy
Budget & Program Planning, Office of
Data Processing Coordinator
Capitol
449-3084



Dial-up, Point-to-Point, & Facsimile Equipment Inventory

PAGE
OF

SECTION I - GENERAL INFORMATION

1. Transaction ☐ A ☐ Add ☐ C ☐ Change2. Organization Code
(D of A use only)3. System ID
(D of A use only)4. Today's Date Y M
R O 5. Disconnect Date
(If Known) Y M
R O

SECTION II - CIRCUIT INFORMATION

6. Circuit ID
(D of A use only)7. Common Carrier
(Name)8. Dedicated Circuit No.
or Telephone No.9. Type of Circuit ☐ A ☐ Dedicated ☐ B ☐ Bus. Line ☐ C ☐ STS ☐ D ☐ FX Other10. Mode of Operation ☐ F ☐ Full Duplex ☐ H ☐ Half Duplex11. Conditioning ☐ Ø ☐ None ☐ 1 ☐ C1 ☐ 2 ☐ C2 ☐ 3 ☐ C3 ☐ 4 ☐ C4 ☐ 5 ☐ C5 ☐ 6 ☐ D1 ☐ 712. Circuit Use ☐ I ☐ Intercity or Inter-city and Local ☐ L ☐ Local Only 13. Regular Hours Use Per Day H M
R N 14. Average Number of Calls per Day During Regular Hours 15. Off Hours Use Per Week H M
R N 16. Is narrative(e.g. teletype)traffic involved?
If so, complete items 17 and 18. ☐ Y ☐ Yes ☐ N ☐ No17. Average number of multiple addressed messages sent per day during regular hours. 18. Average number of addresses per multiple - addressed message sent:

SECTION III - LOCATION INFORMATION

19. Location ID
(D of A use only)
20. Operating Activity
21. Street Address
22. City
23. State Zip Code

SECTION IV - TERMINAL INFORMATION

24. Manufacturer (Name)
25. Model No. 26. Ownership P Purchased L Leased
27. Transmission Speed
(Complete A or B)
- A. Facsimile Only

M		S	
I		E	
N		C	

(Per 8½"x11 Page) (Bits per second (BPS))

B. All Other Situations
28. Information Code
(Check up to three)
- A ASCII 8 Level (7 information bits plus parity)

B ASCII 9 Level (8 information bits plus parity)

C EBCDIC

D BCD

E Baudot

F Facsimile

Other (Describe in "Remarks" below.)
29. Modem Type H Hard Wired A Acoustic Coupled

If the above terminal has this modem capability, leave items 30-32 blank.
 If the modem is a separate piece of equipment, answer items 30-32.

SECTION V - MODEM INFORMATION

Name

30. Manufacturer

31. Model No.

32. Ownership

P

Purchased

L	
---	--

Leased

SECTION VI - CONNECTION POINT(S) AT DISTANT END

Location ID (a) (D/A Use Only)	Operating Activity (b)	Street Address (c)	City (d)	State (e)	ZIP Code (f)
33.					
34.					
35.					
36.					

37. Remarks

38. SIGNATURE	39.NAME AND TITLE(type or print)	40. TELEPHONE NO.
41. AGENCY AND OFFICE	42.CONTACT'S NAME	43. TELEPHONE NO.

DATA COMMUNICATIONS TASK FORCE
ISSUES AND ALTERNATIVES

- I. LOCAL DISTRIBUTION COSTS:
 - A. USER WIRED SITE: MSU IN PROGRESS, EMC IS COMPLETED,
NMC IS CONSIDERING.
 - B. TARIFF FOR UNLOADING MULTI-POINTS: NOTHING PENDING,
NO PLANS TO FILE - BELL.
- II. PROTOCOL INCOMPATIBILITIES:
 - A. PROCUREMENT CONTROL OPTION:
 - POLITICAL SENSITIVITY
 - UP TO 15 YEARS TO COMPLETION
 - B. SHIFT TO X.25 BY IBM
 - UP TO 3 YEARS?
 - EUROPEAN SYSTEMS
- III. CONTROL INCREASE IN COORDINATING BODY:
 - A. STEERING COMMITTEE APPROACH
 - B. CENTRALIZED APPROACH
- IV. PHYSICAL INVENTORY COMPLETENESS:
 - A. CONTRACT LABOR UNDER 827
 - B. CLOSE COORDINATION WITH C.S.D.
 - C. PULL IN AND CORRELATE OTHER EXISTING PHYSICAL INVENTORY
 - D. MAINTAIN VOLATILE DATA BASE THROUGH GOVERNOR'S OFFICE
FOR NEW PURCHASES, OR THROUGH COMMUNICATIONS DIVISION.
- V. IDENTIFICATION OF USER COMMUNITY:

INCORPORATED IN IV. ABOVE.

DRAFT

TELEPROCESSING
NEEDS ASSESSMENT METHODOLOGY

March 31, 1981

Harvey M. Gates

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I. INTRODUCTION

This is a document which defines a methodology which can be used as a guide for a teleprocessing network (often referred to as datacommunication) architecture and implementation.

There are five basic steps in datacommunication network design and implementation:

- o Determine network and system objectives -- what do we want the network to do, and who should communicate with who.
- o Gather relevant information as design input -- basically interrogation of the end user.
- o Develop alternative designs for trades and comparisons.
- o Implement a selected alternative.
- o Measure actual performance and compare with objectives and design predictions.

This document concentrates on the gathering of relevant information for the design inputs. It is also assumed that the existing system in place is one of the alternative designs and constitutes a very good benchmark. Therefore, one major element of this information gathering exercise is to document the current system (if it has not yet been done). More will be said about this aspect of the process later.

The definition of datacommunications is the combination of computers and telecommunications: the interchange and processing of encoded information between distant locations connected by telecommunications. Datacommunications are often referred to as datacomm, or teleprocessing.

With this in mind, there are at least six types of datacomm or teleprocessing applications:

- o Remote job entry -- batch processing.
- o Data collection and distribution.
- o Data file transfer -- large files between computers.
- o Message transfer -- electronic mail and person-to-person communications.
- o Inquiry response and record update -- airline reservation and banking systems.
- o Time sharing -- interactive processing.

Most applications can be classified as either throughput sensitive or response-time sensitive.

II. DISCUSSION OF NETWORKS

sary for this survey, to be able to identify and characterize these systems both for defining current techniques of communication as well as listing various alternatives. Obviously, a complex system of end users may employ combinations of different networks. The six basic networks are:

- o Point-to-point dedicated.
- o Multipoint polled -- multidrop.
- o Multiplexed/concentrated.
- o Value added network -- packet or hybrid common carrier.
- o Distributed network.

Each network has a unique set of characteristics.

A. Point-To-Point Dial-Up

Point-to-point dial-up is probably the most common networking employed in Montana. A diagram of point-to-point system is shown in Figure 1. The system characteristics include:

- o Facilities which are available almost everywhere.
- o Attractive off-hour rates.
- o Simple to design.
- o Built-in redundancy for backup.
- o Limited speed (4800 b/s max.).
- o Access available to all points on the network.

The system requires minimal network management since it rides the existing voice circuits and the burden of network responsibility falls on the communication carrier operating companies like Mountain Bell.

B. Point-To-Point Dedicated

The order of network presentation is estimated to be the order of Montana use and potential use. That is to say that point-to-point dial-up and dedicated networking are probably the most commonly used networks, and the potential for confirmed use of these is relatively high. The characteristics of point-to-point dedicated networking are:

- o Wide availability of service.
- o Available in analog and digital modes.

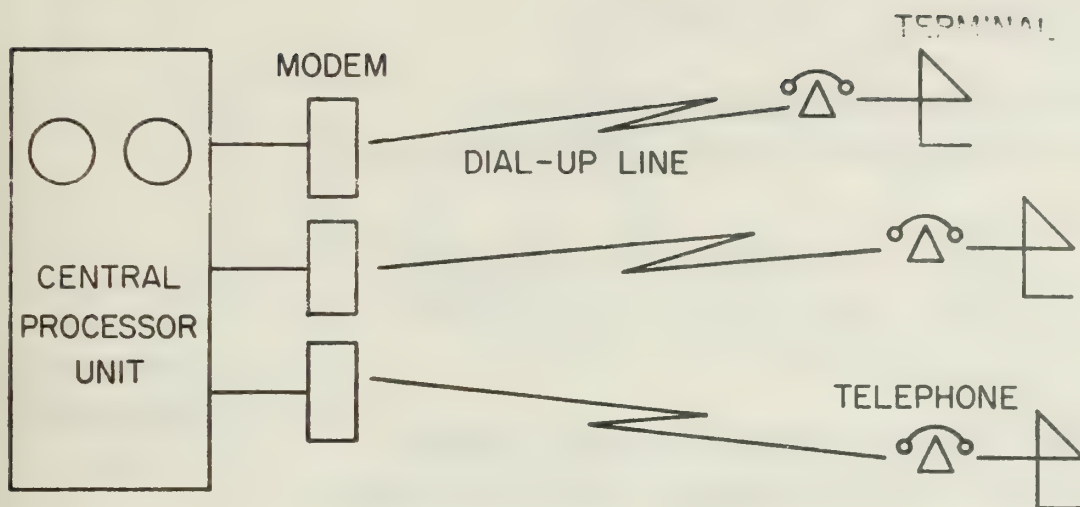


Figure 1. Pt-Pt dial-up.

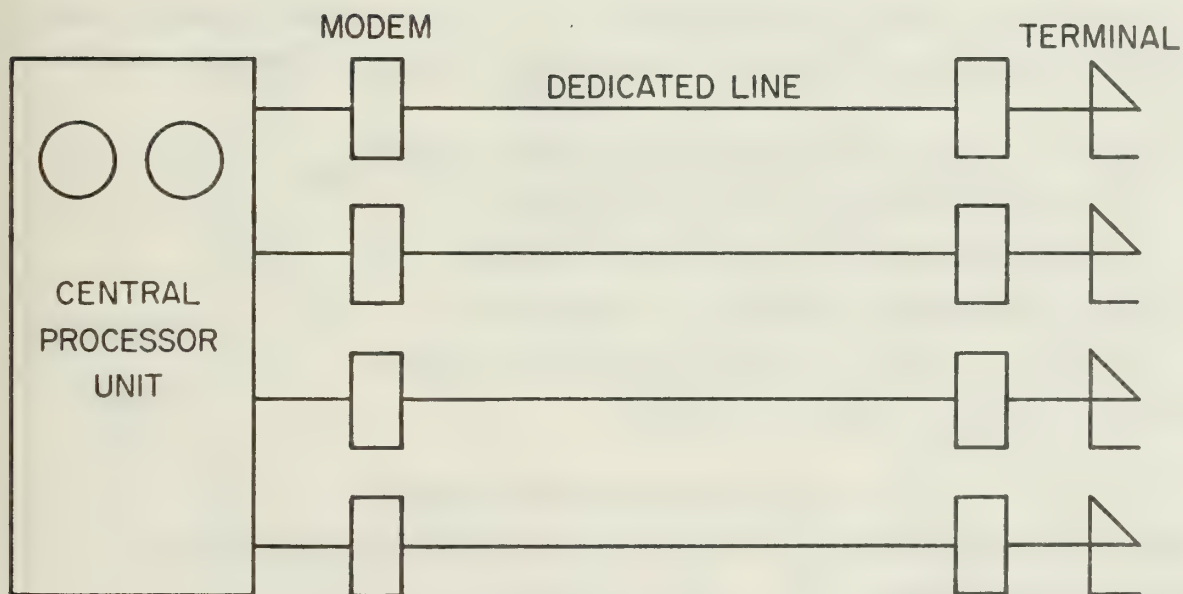


Figure 2. Pt-Pt dedicated.

- o Wide range of speeds.
- o Potentially wasteful of bandwidth.
- o No built-in redundancy.
- o Reconfiguration required to change access.

The diagram of point-to-point networking is shown in Figure 2.

C. Multipoint Polled (Multidrop)

This form of networking has the following characteristics:

- o Normally used for response time sensitive applications.
- o Performance closely depends on network design.
- o More complex network management than point-to-point.
- o Generally lower availability than point-to-point.
- o Often provides significant cost savings over point-to-point.
- o Very common implementation due to geography and carrier rating philosophy.

Multipoint polled networking is shown in Figure 3.

D. Multiplex/Concentrated

This networking scheme allows grouping. There is a great variety in hardware which is available to implement these network systems. The characteristics include:

- o Used in conjunction with point-to-point structures to improve utilization of line bandwidth.
- o Line savings dependent on network topology.
- o Delays through multiplexors or concentrators must be included in calculating response times.

This networking system is shown in Figure 4.

E. Value Added Networking (VAN)

VANs are in reality packet or hybrid carrier networks which have the following characteristics:

- o In many ways they can be treated like point-to-point dial-up networks.
- c Usage sensitive rates.

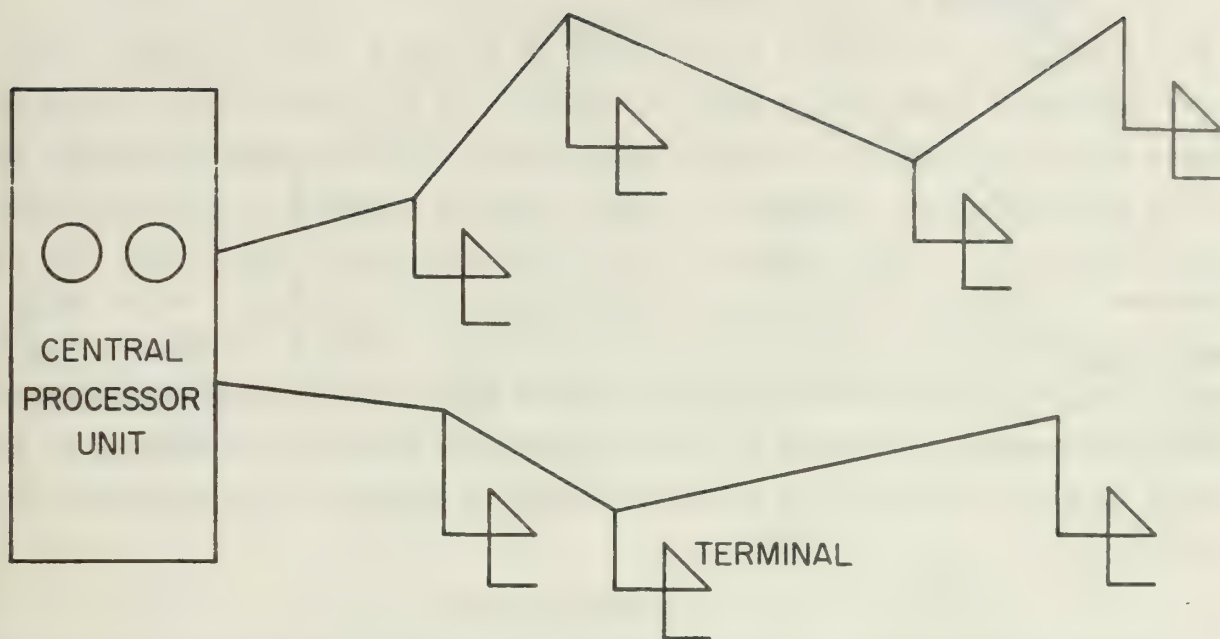


Figure 3. Multipoint polled or multidrop.

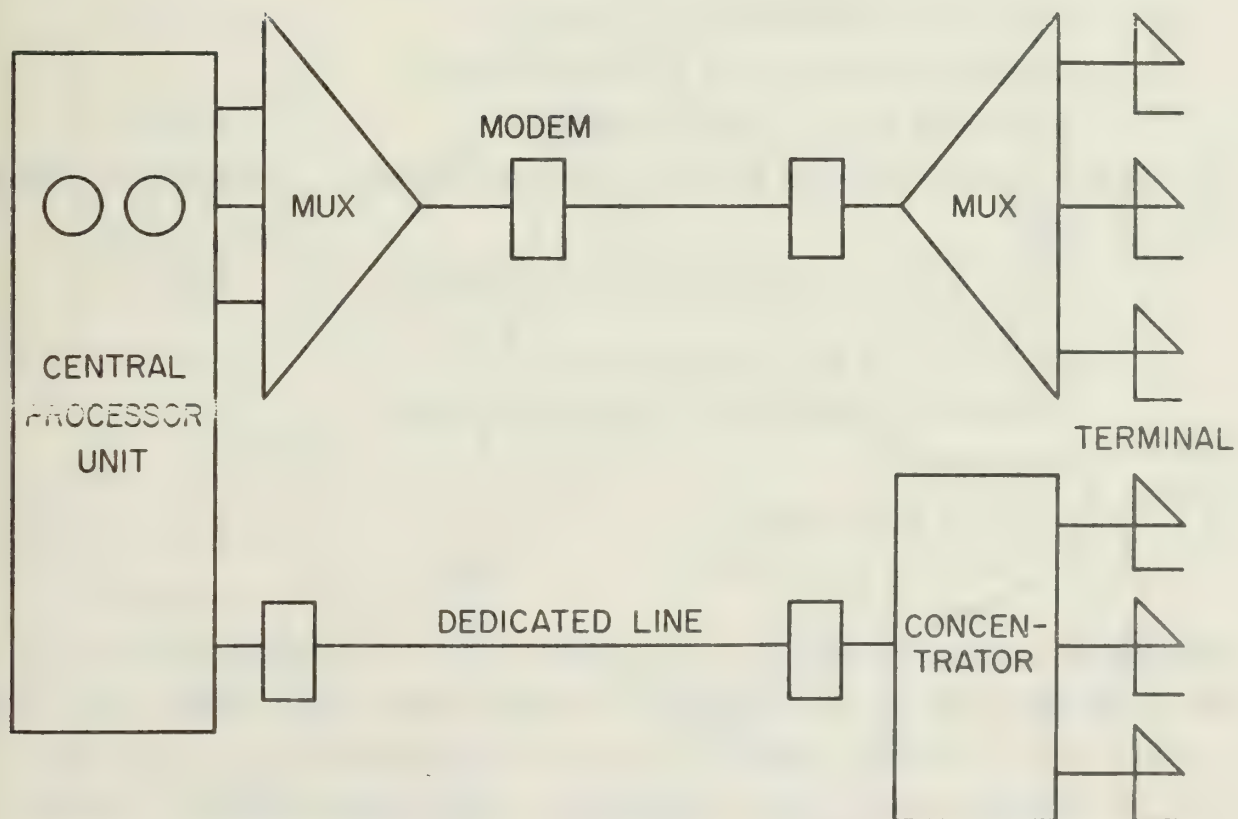


Figure 4. Multiplexed/concentrated.

- o Limited but growing access availability.
- o Limited but growing interface support.

A representative diagram of a VAN is shown in Figure 5. One can either write a great deal about describing a VAN, or summarize it as is done here. A VAN is almost always operated by a communication common carrier operating company which allows minimum network management. Such operating companies include TELENET, UNINET, and so on. These companies buy telephone and data lines from long-line suppliers like AT&T. Through very clever and judicious schemes, and a large user force, the VAN operating companies can squeeze maximum efficiency from their circuits using relatively sophisticated techniques which are performed by special computers. As far as a user is concerned, however, the network is very simple to access, and for all practical purposes behaves like a point-to-point dial-up.

F. Distributed Network

As was stated before, the most common and widely used network schemes were stated first. In all likelihood, there are a very few distributed networks used in Montana by Federal, state, and local governments, private, industrial, safety, or transportation users. This is due to two major factors:

- o Low state and city populations.
- o Communication common carrier operating companies in Montana are not technically as advanced as in large user states.

This network type is included primarily for completeness. It has the following characteristics:

- o Most complex of network structure to design and maintain.
- o Not often used for private networks.
- o Involves the simultaneous solution of three sub-problems:
 - Link assessment.
 - Capacity assignment.
 - Route assignment.

There may be reasons for the state user to access a distributed network such as that being developed by the Department of Energy, Western Area Power Administration in Billings, Montana. However, as in a VAN, access is very much like point-to-point dial-up. A representation of a distributed network is shown in Figure 6.

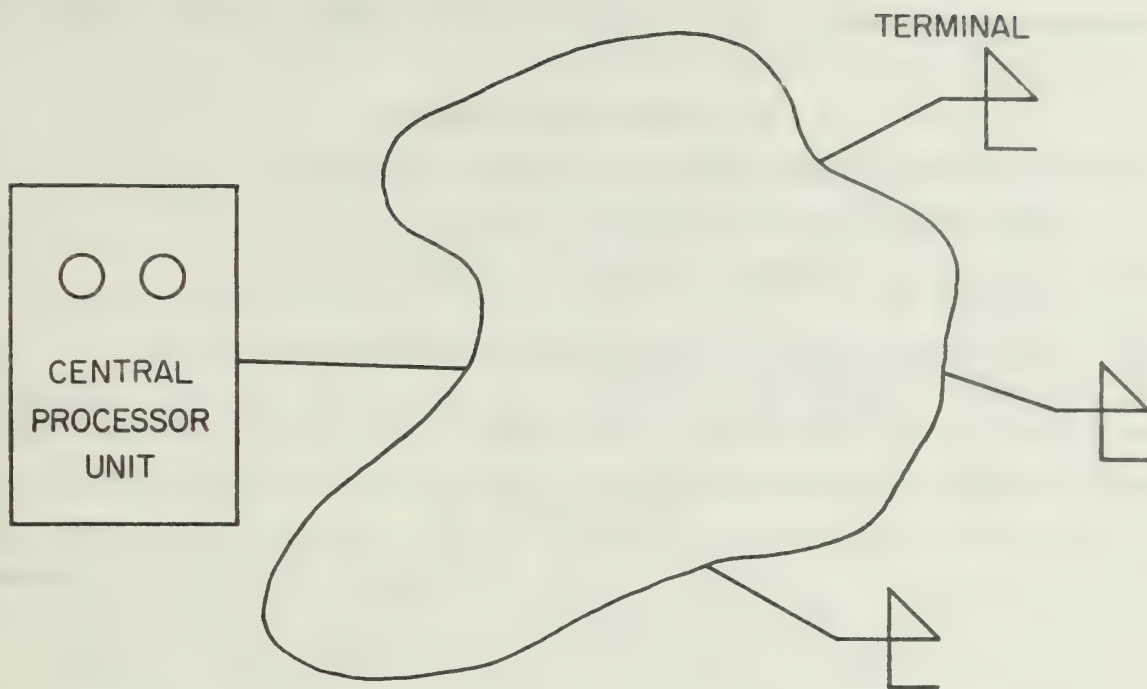


Figure 5. Packet or hybrid carrier networks.

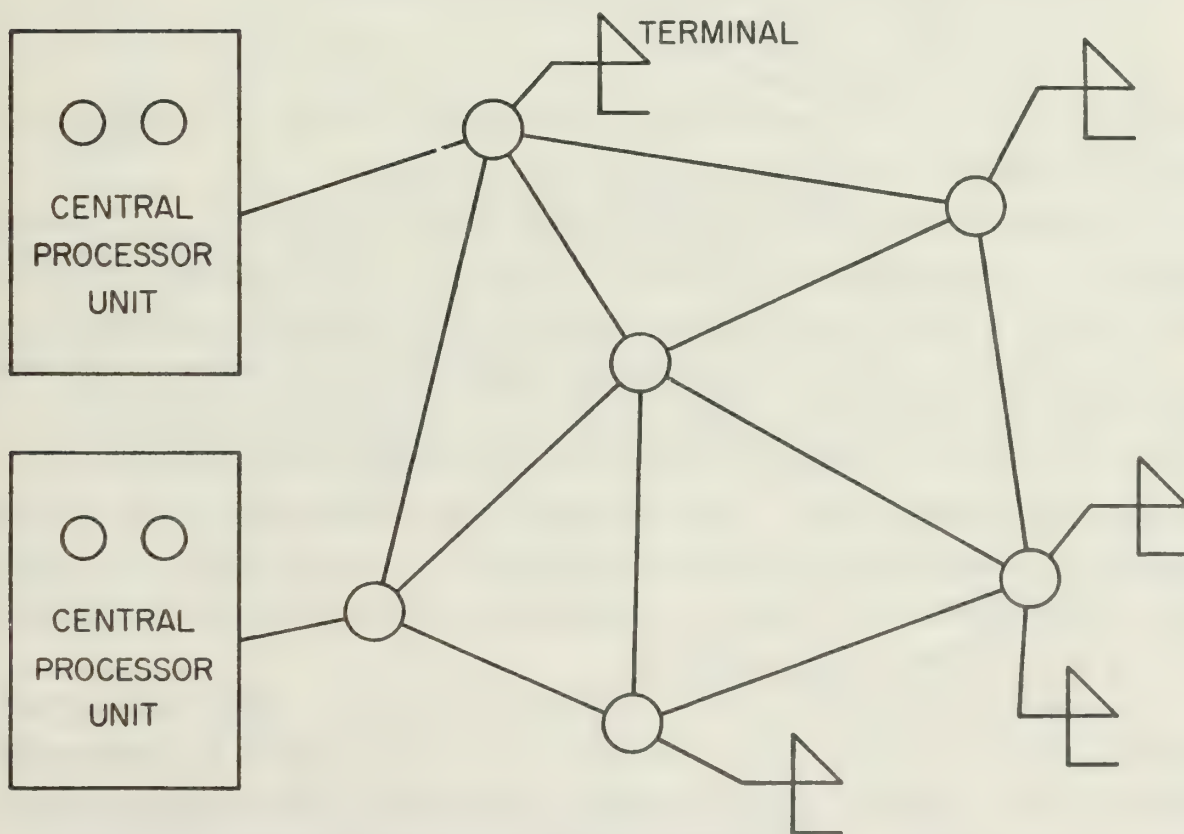


Figure 6. Distributed networks.

This concludes the general discussion of network systems and clears the way for developing a methodology for surveying Montana datacommunication needs.

III. ADDED INFORMATION

There are several means for securing user information:

- o Use questionnaires and perform a survey.
- o Interrogate the central processor systems for usage information.
- o Interrogate operating company billing data and customer service organizations.

One can approach this problem from the top down or bottom up. And one can accumulate parametric information (that is survey the entire user community) or one can accumulate statistical information (that is sample the user community).

The approach here is a bottom-up user survey which can either be parametric or statistical. Since none of the techniques for securing data are unique, it is strongly advisable that all three be used -- comparing one to another.

This bottom-up methodology is most successful if a trial run is made. This allows bugs to be worked out and quickly determines if a parametric analysis can be performed over one which is statistical in nature.

The survey should be divided into two major groups:

- o Those users in Helena, and
- o all other state users.

It may, in fact, be more convenient to sample Helena users, and attempt to gather as much data on all other state users as possible.

Ultimately the results outlined in this survey coupled with a clear determination of network and system objectives (derived by the datacomm architects) will be used to derive the alternative designs and comparative trade-offs.

Be completely aware of the fact that measurements can and are being made on these networks. In Montana, measurements are, in part, being made by the central processors in special diagnostic software designed to aid in load analysis and computer usage. And measurements are being made by the operating companies, if nothing else, for billing purposes. However, there are probably sets of measurements which need to be made and are not difficult to implement, but are not, in fact, being conducted.

In addition, datacomm network modeling is a means by which one can test for "optimizations" prior to actual implementation. These models are well-known and understood (M. Schwartz, Computer-Communication Network Design and Analysis, Prentice-Hall, 1977). Such models include algorithms referred to as the

PRIM, KRUSKAL, ESAU-WILLIAMS, and KERSHENBAUM & CHOU techniques for network configuration analysis. The enclosed questionnaire attempts to address all of the user information necessary for input to these systems. Additional information on queuing, response timing, volume relationships, and message distribution require direct interaction with the centralized processing staffs.

Therefore give your attention to the enclosed forms. You will soon learn that clustering user terminals together where appropriate will be most expeditious, i.e., where there are many terminal devices all serving basically the same purpose, for the same agency, and using the same central processor.

IV THE RESPONSE

1. Respond to the remainder of this material only if you have ADP equipment which communicates with other ADP equipment inside or outside your office.
2. If the devices in your office all communicate with the same central system, then fill out Form M1 and M2.
3. If the devices in your office are split such that part of them communicate with one system and the other communicates with a completely different system, fill out Form M1 and M2 for each entity.
4. If one or more devices normally access more than one central system, fill out Form M1 and M2 for each device in your office.
5. If the ADP device in your office acts as a CPU and receives input from other devices (i.e. you are a centralized processor), fill out Form M3 only.

o GENERAL INFORMATION

Agency _____

Agency function (i.e., law enforcement, . . .) _____

Address _____

Telephone _____

Manager/ADP _____

Manager/Telecommunications _____

Other Key personnel:

o ORGANIZATIONAL STRUCTURE AND DEMOGRAPHIC DATA

1. Organizational structure of the defined system (i.e., city, county, district, . . .) on the following forms:

- o Governmental Entity Organization Structure (Form 1N attached at the end of this package).
- o Agency/Department Management Structure (Form 2N attached at the end of this package).
- o Special Interagency Relationships (Form 3N attached at the end of this package).

NOTE: When available, attach existing organizational charts, including any modification or planned changes.

2. Demographic data of the defined system. Review of this data is intended to include but not limited by the questions set forth on Form 4N which is attached at the end of this package.

NOTE: State and local government profiles should be included as appropriate for trends and baseline data.

o COMMUNICATION INTERFACE INFORMATION

1. What terminal device or devices do you use? With dumb terminals just list the total number in your office. Otherwise specify type, name, and identifiers.

2. Do you run interactively (async) ☐ Yes ☐ No

Do you run batch -- RJE (bisync) ☐ Yes ☐ No

Both, explain: ☐ Yes ☐ No

3. Do you run

☐ Simplex (one-way only)?

☐ Half duplex (one-way at a time)?

☐ Full duplex (two-way simultaneous)?

☐ Parallel bit streams?

4. If modems are used, continue. If not, go to question 9. Explain why modems are not used.

5. Do you know the Bell equivalent series of your modem(s)? See Table below.

☐ 100. How many? _____

☐ 200. " " _____

☐ 300. " " _____

☐ 600. " " _____

☐ 800. " " _____

☐ Don't know.

☐ Other _____

Bell Data Sets Numbering Series

SERIES	BANDWIDTH	TRANSMISSION SPEED	DATA TRANSMISSION	SIGNAL
100	Narrow and Voice	Up to 300 Bit/Second	Serial	Digital
200	Voice	Up to 9600 Bit/Second	Serial	Digital
300	Wide	Up to 460k Bit/Second	Serial	Digital
400	Narrow	0-75 Character/Second	Parallel	Digital
500	Experimental Models Only	19 2k Bit/Second 230 4k Bit/Second	Parallel	Analog
600	Voice	DC to 900 Character/Second	Facsimile	Analog
800	Data Auxiliary Sets		Automatic Calling Unit	
900	Telephone Company Data Test Equipment			

6. Do you know the features of your modem(s):

- ☐ Reverse channel
- ☐ Soft carrier disconnect
- ☐ Automatic adaptive equalizer
- ☐ Testing
- ☐ Transmit only - receive only
- ☐ Originate - only - answer only
- ☐ Don't know all features
- ☐ Don't know about some

Please expand in the blank(s) below if wide mix is used, or if clarification is necessary.

7. Do you have to use a Data Access Arrangement (DAA) device with your modem(s)?

- ☐ Yes
- ☐ No
- ☐ Some, explain.
- ☐ Don't know.

8. Do you use an Automatic Calling Unit (ACU)?

- ☐ Yes
- ☐ No
- ☐ Some, explain.
- ☐ Don't know.

9. Do you happen to know your line protocols (Level II protocols)?

TTY ☐

BISYNC ☐

SDLC/HDLC/ADCCP ☐

DDCMP ☐

Other, explain ☐

Don't know ☐

10. Do you happen to know your physical (Level I) protocols?

RS 232 C ☐

RS 449 ☐

X.21 ☐

Other, explain ☐

Don't know ☐

11. Do you happen to know your network (Level III) protocols?

X.25 ☐

Part of Level II ☐

Other, explain ☐

Don't know ☐

12. What data rates?

Data rates in bands.	Can you use?	Do you use?	Single line.	Parallel lines.
up to 75				
110				
134.5				
150				
300				
1200				
2400				
4800				
9600				
19200				
Others				
(Specify)				

13. What code is used by your ADP system(s)?

ASCII ☐

EBCDIC ☐

Six bit transcode (SBT) ☐

Others, specify ☐

Don't know ☐

14. One or two stop bits?

One ☐

Two ☐

Don't know ☐

Not applicable ☐

o COMMUNICATION NETWORK INFORMATION

(Only fill this section out if you access other central system(s)).

1. Do you use a phone or phone line to access a computer
- ☐
- Yes
- ☐
- No

Use a state dial-up system ☐Use a local dial-up number ☐Other than a state access
arrangement ☐Use DDD ☐Use WATS ☐Use a dedicated, private line ☐

2. Which figure in the network discussions at the beginning of this paper best describes your access arrangement?

Figure 1 ☐ Pt-Pt Dial-upFigure 2 ☐ Pt-Pt DedicatedFigure 3 ☐ Multipoint PolledFigure 4 ☐ Multiplexed/ConcentratedFigure 5 ☐ Value Added NetworkFigure 6 ☐ Distributed NetworkDon't know ☐

3. Are your terminal device(s) used more in the

<input type="checkbox"/>	{	Spring?	What percent?	<input type="text"/>	}	Should equal 100%.
		Summer?	" "	<input type="text"/>		
		Fall?	" "	<input type="text"/>		
		Winter?	" "	<input type="text"/>		

☐ About the same all year?☐ Other long-term cycles? (i.e., fiscal year cycle, legislative cycle, etc.). Explain.☐ Don't know.

4. Are your terminal device(s) used more at the

<input type="checkbox"/>	{	Beginning of month? What percent? _____	}	Should equal 100%
		Middle of month? " " _____		
		End of month? " " _____		

☐ About the same all month?

☐ Other monthly cycles? Please explain.

☐ Don't know.

5. Are terminal device(s) used more at the

<input type="checkbox"/>	{	Beginning of the week? What percent? _____	}	Should equal 100%
		Middle of the week? " " _____		
		End of the week? " " _____		
		Week end? " " _____		

☐ Too variable to tell?

☐ Don't know.

6. Are your terminal devices(s) used more in the

<input type="checkbox"/>	{	Morning work hours? What percent? _____	}	Should equal 100%
		At lunch time? " " _____		
		Afternoon work hours? " " _____		
		Early evenings? " " _____		
		Late evenings/early morning " " _____		

☐ Too variable to tell? _____

☐ Don't know.

7. Are your terminal device(s) running on a demand bases, i.e., on and available when you need it or them? ☐ Yes ☐ No

Any clarifications? _____

If No go to question 11.

8. If they are running and available on demand, estimate in hours how much time an operator is at the terminal(s) per 8-hour working day. If more than one terminal please clarify. _____

9. If these terminal devices are running and available on demand, how often is the information requested delayed beyond a reasonable (your definition of reasonable) time?
- ☐ Delays are always too long.
- ☐ Sometimes intolerable delays occur.
- ☐ Infrequent delays occur.
- ☐ Never noticed.
- Need clarification? _____

10. Does this terminal device which is running and available
- ☐ Breakdown often as far as you are concerned?
- ☐ Sometimes?
- ☐ Infrequently?
- ☐ Don't know?
11. It is assumed that your device thus far is on one form of dedicated circuit. Is this correct?
- ☐ Yes
- ☐ No
- ☐ Both dedicated and dial-up exist.
12. Do you access a computer by dial-up? ☐ Yes ☐ No
13. How long is your average connect? _____

14. How many connections per day per terminal? Describe by terminal.

15. Do you have difficulty accessing the computer due to the telecommunication services?

☐ Yes

Busy all the time ☐

Busy when I need
it the most ☐

Busy sometimes ☐

Never noticed ☐

I am disconnected
on occasion ☐

☐ No

Comments:

o NETWORK CONFIGURATION INFORMATION

1. Do you access a

☐ Multiplexer☐ Concentrator☐ VAN

What brand or whose system? _____

Where is it located (office, building, state)? _____

Who owns or rents it? _____

How do you access it:

☐ Dedicated line-in?☐ Local dial-up?☐ WAT's?☐ DDD?☐ State network access?

2. Do you access an intra or interoffice network?

☐ Yes.

____ Commercial? Who's? _____

____ How built network?

____ Direct computer access: no network involved?

____ Multipoint poller -- multidrop?

☐ No.☐ Don't know.

Describe, if appropriate. _____

o INFORMATION ON INPUT TO A CENTRAL PROCESSOR

1. How many central processors do you access? _____

2. Who's processors are they?

3. What kind of machines are they?

4. Is your machine accessible to other terminal devices, assuming you still access another processor?

☐ Yes.

What kind of machine do you have? _____

How many ports now available? _____

Who are your users and where are they generally located? _____

Define as best as you can, the port access equipment if you are operating a fairly large system. Diagram if necessary.

☐ No, we do not have ports into our system.

o APPLICATION INFORMATION

1. Is the work you perform on your system:

☐ Remote Job Entry.☐ Data collection/distribution.☐ Data file transfer.☐ Message transfer.☐ Inquiry response/record update.☐ Time sharing.☐ Other _____

2. Can your applications be classified as either

☐ throughput sensitive.☐ response time sensitive☐ Other _____
_____o PROBLEM REVIEW AND SUMMARY1. Coordination and interface with others _____

_____2. Responses to telecommunication problems _____

_____3. Cost of present service _____

4. New technology _____

5. Projected expenditures _____

6. State telecommunication policy _____

7. National telecommunication policy _____

8. Legal and other external constraints _____

9. System failures.
- o What can cause a major element of the system to fail? _____

 - o How likely is each possible cause of failure? _____

 - o Is it likely that an element and its back-up will fail at the same time,
for the same reason? _____

- o Is the cause that produces a failure likely to create also an unusually heavy demand for services? _____

- o Does a primary back-up exist and does it provide an adequate level of service in most situations? _____

- o Other thoughts or comments? _____

10. When you access a central processor, do you pass into or through an emulator?
- ☐ Yes.
From what to what? _____

- Do you emulate at your end or his? _____

- ☐ No.
- ☐ Don't know.

o INFORMATION ON THE CENTRAL PROCESSOR

Please either provide your system description or define and/or diagram the central processor. Include access arrangements and port information.

SYSTEM DEMOGRAPHIC DATA

In order to effectively develop a system which will serve not only the needs of today but also the needs of the future it is necessary to have a good estimate of the environment in which the agency will operate for the next 5-10 years. Below are listed some categories of change which are important. Please comment on them.

o Population Trends

Steady-increase-decrease? How much? Shifts within area? _____

o Area Growth

Will present political boundaries change to include more area? Which way will they go? (Include "future" map, if possible.) _____

o Tax Bases & Budgets

1. What significant changes might occur in the tax base? _____

2. Will operating budgets be affected? How? _____

o Economic Class Proportions of Population

As population grows will low - middle - high income groups change in terms of % of total population?

If so, how? _____

o Political Trends

Will form of government change? _____

STATE OF MONTANA

DEPARTMENT OF ADMINISTRATION

MONTANA TELECOMMUNICATIONS PROJECT

DATA COMMUNICATIONS INVENTORY

AND

NEEDS ASSESSMENT SURVEY

Room 227
Mitchell Building
Helena, MT 59620
449-4564

CONTENTS

	<u>Page</u>
I. INTRODUCTION - - - - -	3
II. NETWORKS - Explanations and Diagrams - - - - -	4
Point-to-Point Dial-up - - - - -	4
Point-to-Point Dedicated - - - - -	5
Multipoint Polled (Multidrop) - - - - -	6
Multiplexed/Concentrated - - - - -	7
Value Added Network (VAN) - - - - -	8
Distributed Network - - - - -	9
III. SURVEY INSTRUCTIONS - - - - -	10
IV. SURVEY	11
Form 1: Agency Data - - - - -	12
Form 2: Agency Organizational Structure - - - - -	13
Form 3: Special Interagency Relationships - - - - -	14
Form 4: Demographic Data - - - - -	15
Form 5: Communications Interface - - - - -	16
Form 6: Communications Network - - - - -	17-18
Form 7: Network Configuration - - - - -	19
Form 8: Accessing CPU's - - - - -	20
Form 9: Systems Application - - - - -	21
Form 10: Needs - Problems - Comments - - - - -	22-23-24
Form 11: CPU Systems - Operators - - - - -	25

I. INTRODUCTION

This survey is designed* to assess the existing hardware, software, and computer systems used in Montana's public sector. The long range purpose of this information is to plan for future datacommunications needs. This initial effort is neither exhaustive nor complex because the present need is for basic data to be used in the design of near future planning efforts and preliminary policy analysis.

It is the responsibility of the Montana Department of Administration to develop an integrated, cost-effective datacom plan for the State for the upcoming years. It is the desire of the Department to provide a datacom, or teleprocessing system which efficiently meets the needs of state government and other governments if possible. To do that requires that other agencies make clear what services they require, what systems are presently in place, whether in-place systems are adequate, what problems must be solved, and what anticipated future needs are likely.

It is hoped that the plan eventually adopted will, within budget limitations, permit the Department to design and implement the best possible datacommunications system - as the users view it.

*The majority of the survey has been extracted from a methodology prepared by H. M. Gates of the Institute for Telecommunications Sciences, Boulder, CO 80303.

II. NETWORKS

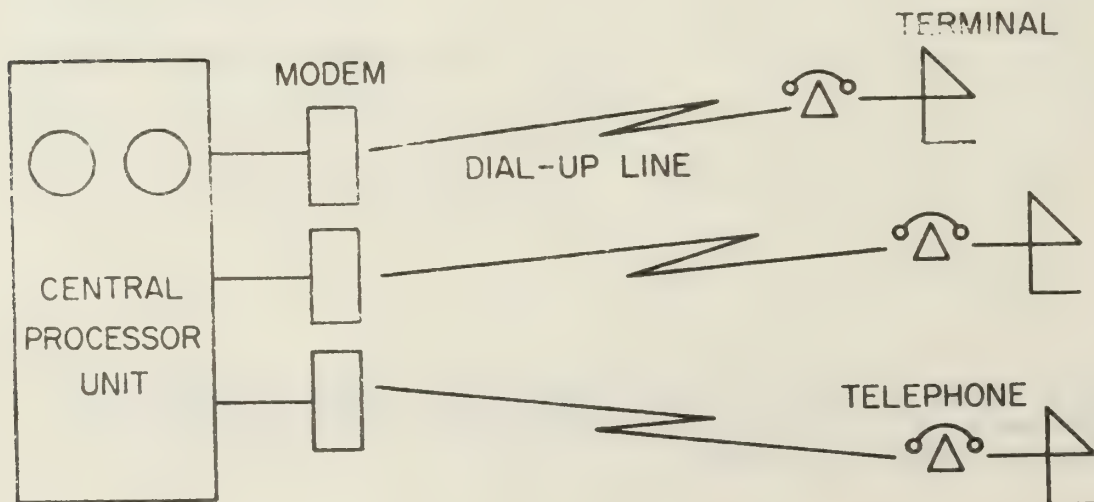
Users responding to this survey must be aware of the various datacom network systems most commonly used. For your information the following networks are described and diagrammed to assist in completing the survey. The various systems are presented in the order in which they are probably used or could be used.

POINT-TO-POINT DIAL-UP

Point-to-point dial-up is probably the most common networking employed in Montana. The system characteristics include:

- o Facilities which are available almost everywhere.
- o Attractive off-hour rates.
- o Simple to design.
- o Built-in redundancy for backup.
- o Limited speed (4800 bps max.).
- o Access available to all points on the network.

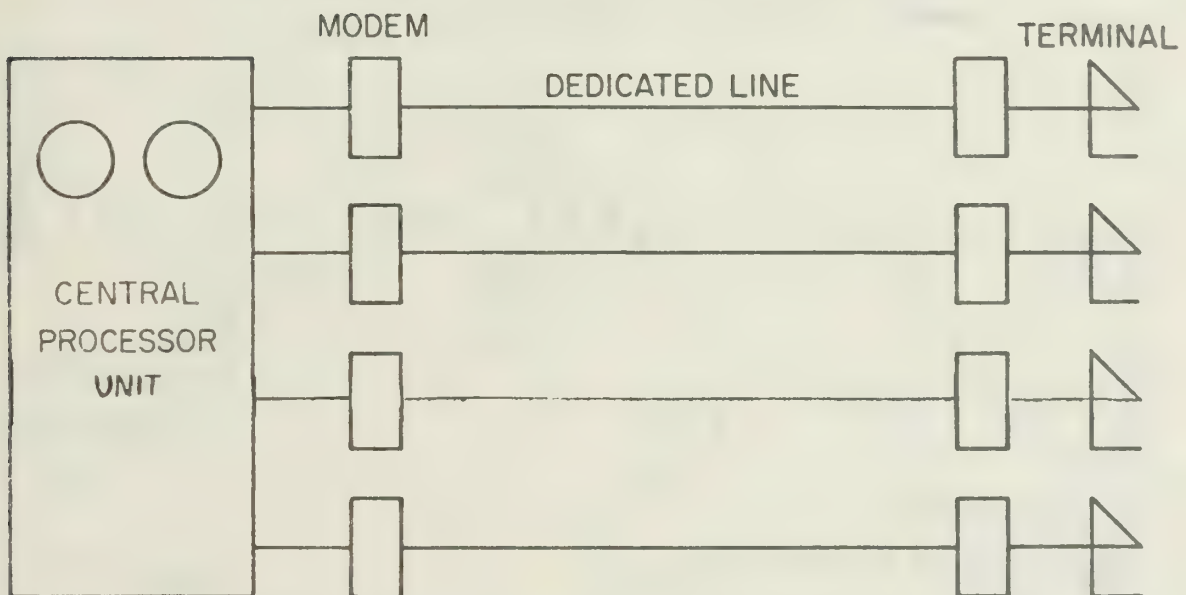
The system requires minimal network management since it rides the existing voice circuits and the burden of network responsibility falls on the communication carrier companies like Mountain Bell.



POINT-TO-POINT DEDICATED

The characteristics of point-to-point dedicated networking are:

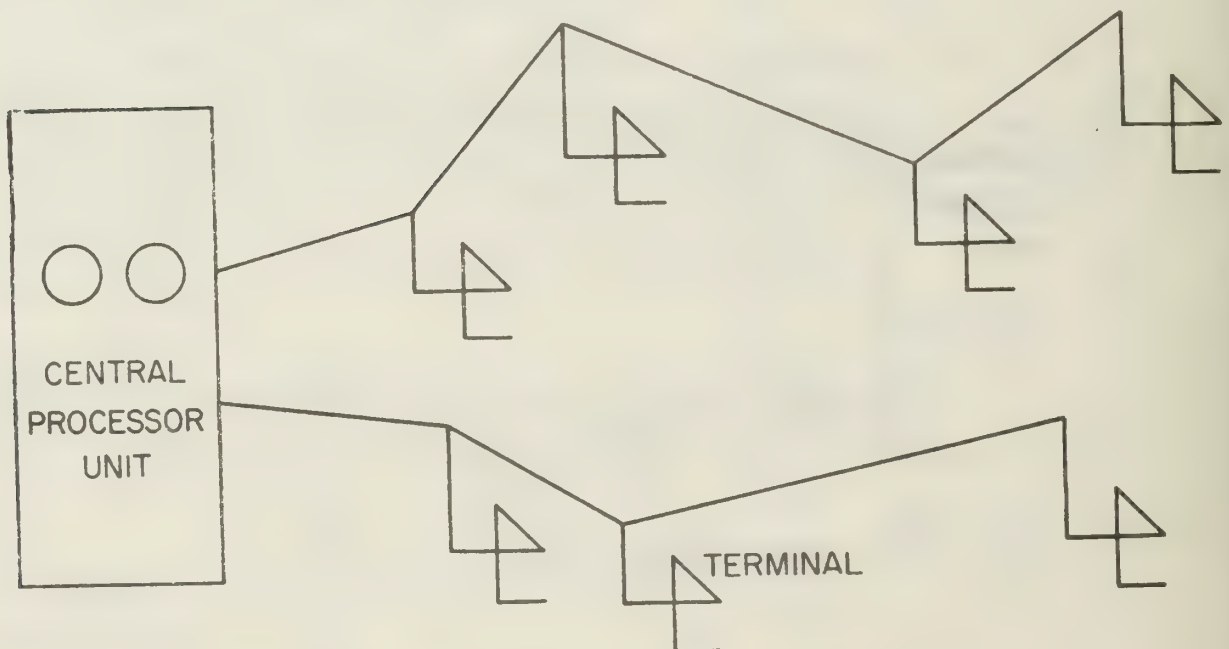
- o Wide availability of service.
- o Wide range speeds.
- o Potentially wasteful of bandwidth.
- o No built-in redundancy.
- o Reconfiguration required to change access.



MULTIPOINT POLLED (MULTIDROP)

This form of networking has the following characteristics:

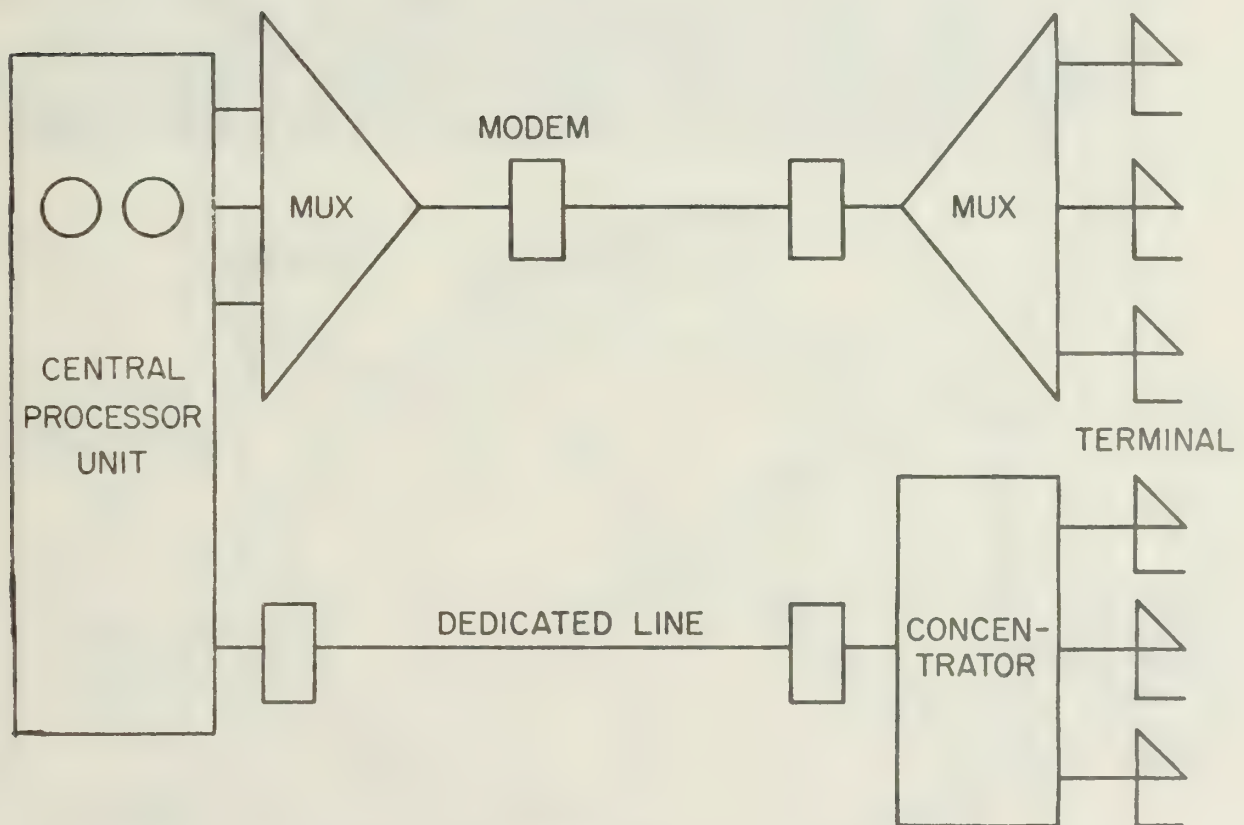
- o Normally used for response time sensitive applications.
- o Performance closely depends on network design.
- o More complex network management than point-to-point.
- o Generally lower availability than point-to-point.
- o Often provides significant cost savings over point-to-point.
- o Very common implementation due to geography and common carrier rating philosophy.



MULTIPLEXED/CONCENTRATED

This networking scheme allows grouping. There is a great variety in hardware which is available to implement these network systems. The characteristics include:

- o Used in conjunction with point-to-point structures to improve utilization of line bandwidth.
- o Line savings dependent on network topology.
- o Delays through multiplexors or concentrators must be included in calculating response times.

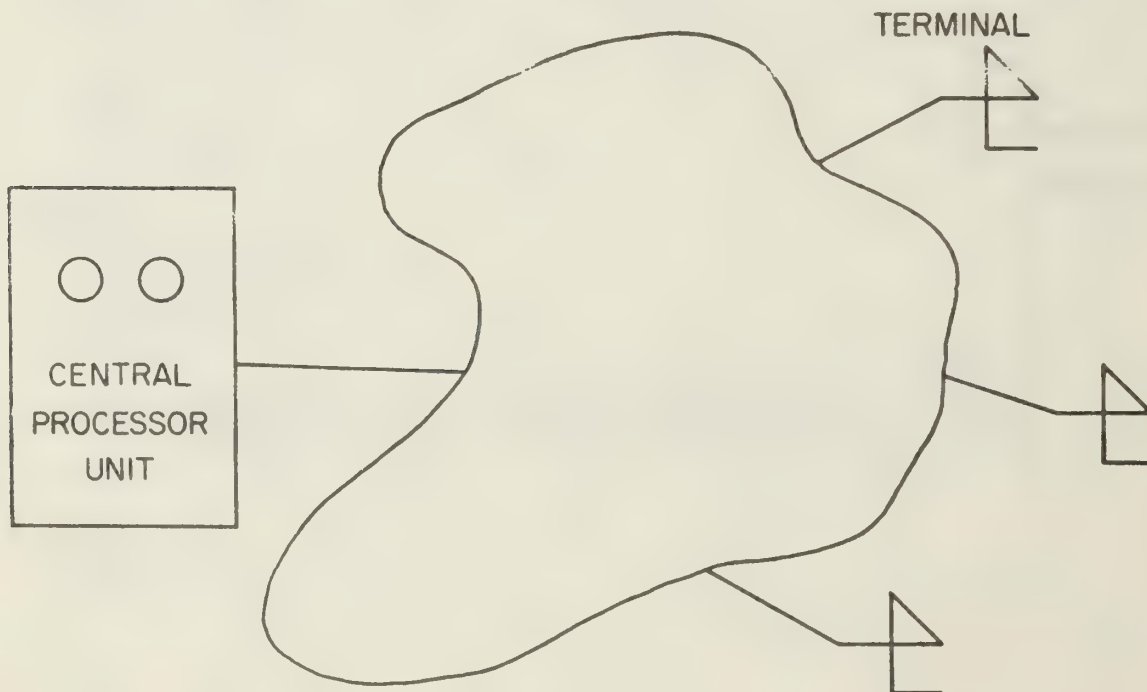


VALUE ADDED NETWORK (VAN)

VANs are in reality packet or hybrid carrier networks which have the following characteristics:

- o In many ways they can be treated like point-to-point dial-up networks.
- o Usage sensitive rates.
- o Limited but growing access availability.
- o limited but growing interface support.

One can either write a great deal about describing a VAN, or summarize it as is done here. A VAN is almost always operated by a communication common carrier operating company which allows minimum network management. Such operating companies include TELENET, UNINET, and so on. These companies buy telephone and data lines from long-line suppliers like AT&T. Through very clever and judicious schemes, and a large user force, the VAN operating companies can squeeze maximum efficiency from their circuits using relatively sophisticated techniques which are performed by special computers. As far as a user is concerned, however, the network is very simple to access, and for all practical purposes behaves like a point-to-point dial-up.



DISTRIBUTED NETWORK

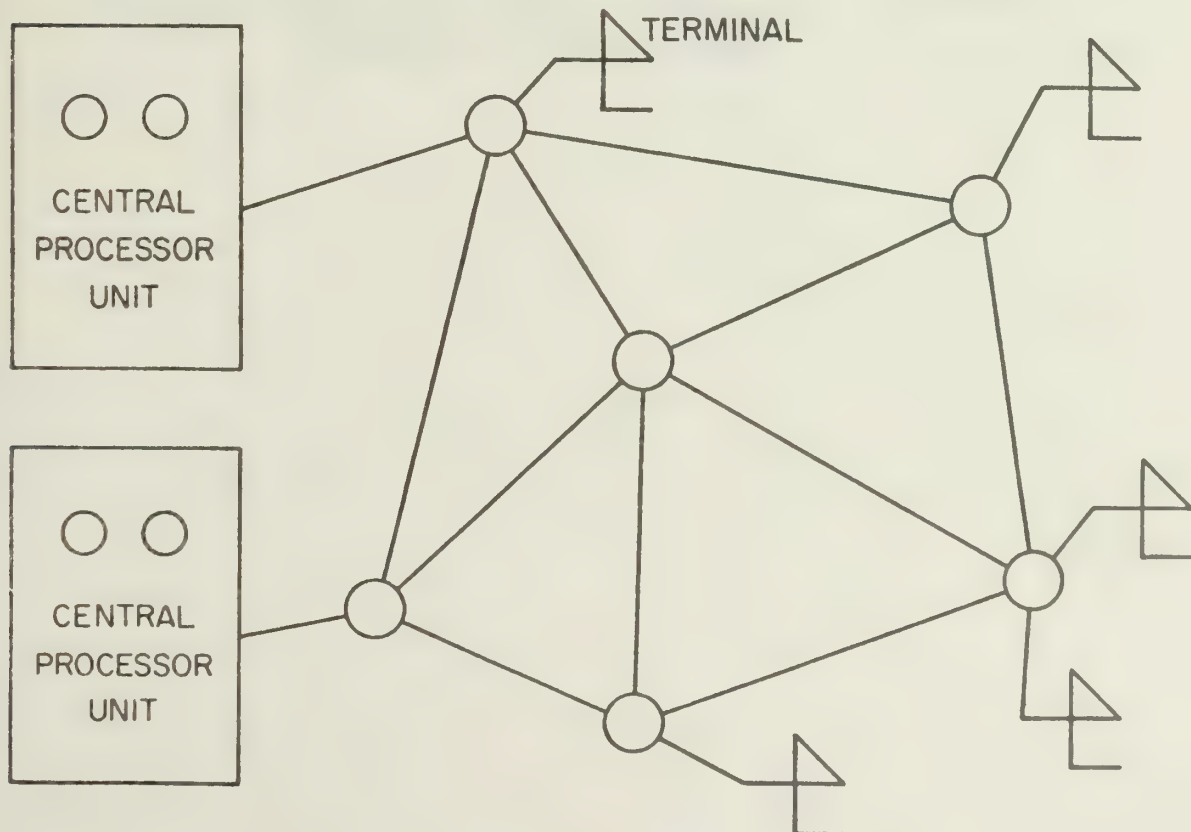
In all likelihood, there are a very few distributed networks used in Montana. This is due to two major factors:

- o Low state and city populations.
- o Communication common carrier operating companies in Montana are not technically as advanced as in large user states.

This network type is included primarily for completeness. It has the following characteristics:

- o Most complex of network structure to design and maintain.
- o Not often used for private networks.
- o Involves the simultaneous solution of three sub-problems:
 - Link assessment.
 - Capacity assignment.
 - Route assignment.
- o Access is similar to point-to-point dial-up.

There may be reasons for the state user to access a distributed network such as that being developed by the Department of Energy, Western Area Power Administration in Billings, Montana.



III. SURVEY INSTRUCTIONS

Please fill out the appropriate forms according to the following chart.

Forms numbered 1, 2, 4, 5, 8, 9, 10 - ALL AGENCIES

Forms numbered 5, 6 - All agencies accessing off-prmise CPU's (regardless of which agency owns the CPU).

Form numbered 3 - All agencies sharing equipment, software, personnel, or funding.

Form number 11 - All agencies operating a central processing unit (CPU) computer (regardless of size or interface with other systems).

IV.

SURVEY

AGENCY DATA

1. Agency Name _____
Address _____

2. Agency Function (i.e., Law Enforcement) _____

3. Agency Director or Administrator _____
Address _____
Telephone _____

4. Automatic Data Processing Chief _____
Address _____
Telephone _____

5. Telecommunications Chief _____
Address _____
Telephone _____

6. Other key Datacom personnel

Name _____	Name _____
Title _____	Title _____
Address _____	Address _____
Telephone _____	Telephone _____

AGENCY ORGANIZATIONAL STRUCTURE

(Describe or diagram the structure of your agency and the ADP organization. Organizational charts may be used).

SPECIAL INTERAGENCY RELATIONSHIPS

(Describe and diagram the relationship between your agency and any others with which you share functions, computer equipment or usage, ADP related funding, etc.).

DEMOGRAPHIC DATA

1. Does your agency represent

City of _____.

County or city/county of _____.

State of Montana

Federal Department of _____.

Other (specify) _____.

2. Population of area served _____.

3. Specific functions performed by your agency:

_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

4. Describe your user population and indicate its growth over the next 5 years as nearly as possible.

COMMUNICATION INTERFACE INFORMATION

1. What Terminal device or devices do you use?

<u>NO.</u>	<u>TYPE</u>	<u>NAME</u>	<u>IDENTIFYERS (MODEL, ETC.)</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

2. Do you run interactively Yes No

If yes, which application do you run?

TSO

CICS

BASIC

OTHER (specify) _____

3. Which of the telecom circuits do you run?

SIMPLEX (ONE-WAY ONLY)

HALF DUPLEX (ONE-WAY AT A TIME)

FULL DUPLEX (TWO-WAY SIMULTANEOUSLY)

PARALLEL BIT STREAMS

DON'T KNOW

COMMUNICATION NETWORK INFORMATION

1. Do you use a phone or phone line to access a computer Yes No
- Don't Know

Use a state dial-up system

Use a local dial-up number

Other than a state access
arrangement

Use DDD

Use WATS

Use a dedicated, private line

Don't know

2. Which figure in the network discussions at the beginning of this paper best describes your access arrangement?

Figure 1 Pt-Pt Dial-up

Figure 2 Pt-Pt Dedicated

Figure 3 Multipoint Polled

Figure 4 Multiplexed/Concentrated

Figure 5 Value Added Network

Figure 6 Distributed Network

Don't Know

3. Are your terminal device(s) running on a demand bases, i.e., on and available when you need it or them? Yes No

Any clarification?

4. Do your terminal devices access an off premise CPU by

Dedicated circuits? How many? _____

Dial-up circuits? % CPU access _____

(fill out both, if applicable)

5. Indicate the average number of Terminal-CPU connections and the average length of such connections by terminal type:

<u>TERMINAL TYPE</u>	<u>NO. TERMINALS</u>	<u>AVER. DAILY CONNECTIONS</u>	<u>AVER. MINUTES PER CONNECTIONS</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

6. What difficulty do you have - if any - in accessing CPU's through dial-up telecommunications services?

Frequent busy signal

Busy signal when access is most required on

Occasional busy signal

Occasional disconnection after access acquired.

No significant problems have been noticed

Comments: _____

NETWORK CONFIGURATION INFORMATION

1. Do you access a

Multiplexer

Concentrator

VAN

What brand or whose system? _____

Where is it located (office, building, state)? _____

Who owns and operates it? _____

How do you access it:

Dedicated line-in?

Local dial-up?

WAT's?

DDD?

State network access?

2. Do you access an intra or interoffice network?

Yes.

Commercial? Who's? _____

How is it constructed?

Direct computer access: no network involved?

Multipoint poller -- multidrop?

No.

Don't know.

Describe. _____

INFORMATION ON INPUT TO A CENTRAL PROCESSOR

1. Indicate the CPU's you access, the CPU type, and the number of your terminals accessing each CPU.

<u>CPU Owner/Operator</u>	<u>CPU Type</u>	<u>No. Terminals Accessing CPU</u>
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

2. Are there additional data files or other central processing units you would like to access?

No

Yes

If yes,

Which data files? _____

Which CPU's? _____

3. If you operate a CPU, of whatever size, please indicate:

<u>CPU Type</u>	<u>Ports in Use</u>	<u>Ports Unused</u>	<u>CPU Users & Location (Attach List if Nec)</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

If you have port access equipment, describe it. Use a diagram.

There are no ports into our system.

SYSTEMS APPLICATION INFORMATION

1. Is your system used for:

	[%] <u>Currently</u>	[%] <u>Planned</u>	[%] <u>Desirable</u>
Remote job entry	_____	_____	_____
Data collection/distribution	_____	_____	_____
Data file transfer	_____	_____	_____
Message transfer	_____	_____	_____
Inquiry response/record update	_____	_____	_____
Time sharing	_____	_____	_____
Other _____	_____	_____	_____

2. Are your system applications

Throughput sensitive

Response time sensitive

Other (specify) _____

3. When accessing a central processor, do you pass into or through an emulator?

Yes.

Your protocol?

Their protocol?

Do you emulate at your end or his? _____

No.

Don't know.

NEEDS - PROBLEMS - COMMENTS

1. Are there functions you would like your system(s) to perform which are not within your present capabilities?
If so, please list them?

a. _____

b. _____

c. _____

d. _____

e. _____

2. What are your problems, and consequent needs, resulting from (include costs, functional problems & needs, etc.):

a. PROTOCOL INCOMPATIBILITIES _____

b. NEW EQUIPMENT _____

c. DATA TRANSMISSION _____

d. CENTRAL PROCESSOR _____

e. SYSTEMS COORDINATION _____

f. LOCATION (OF CPU, ETC.) _____

g. GOVERNMENT JURISDICTIONS _____

h. STATE TELECOMMUNICATIONS POLICY/LAWS _____

i. FEDERAL TELECOMMUNICATIONS POLICY/LAWS _____

j. NEW TECHNOLOGY _____

k. NEW DEMANDS UPON SYSTEM _____

l. SYSTEM DOWN TIME _____

m. OTHER COMMENTS _____

3. Do you share time on your systems' equipment with other agencies?

No

Yes

If yes, explain _____

4. Do you buy shared time on someone elses system (besides CPU time)?

No

Yes

5. If your system operating costs could be reduced by piggybacking onto the State's central computer system,

a. How would you expand the use of your system? _____

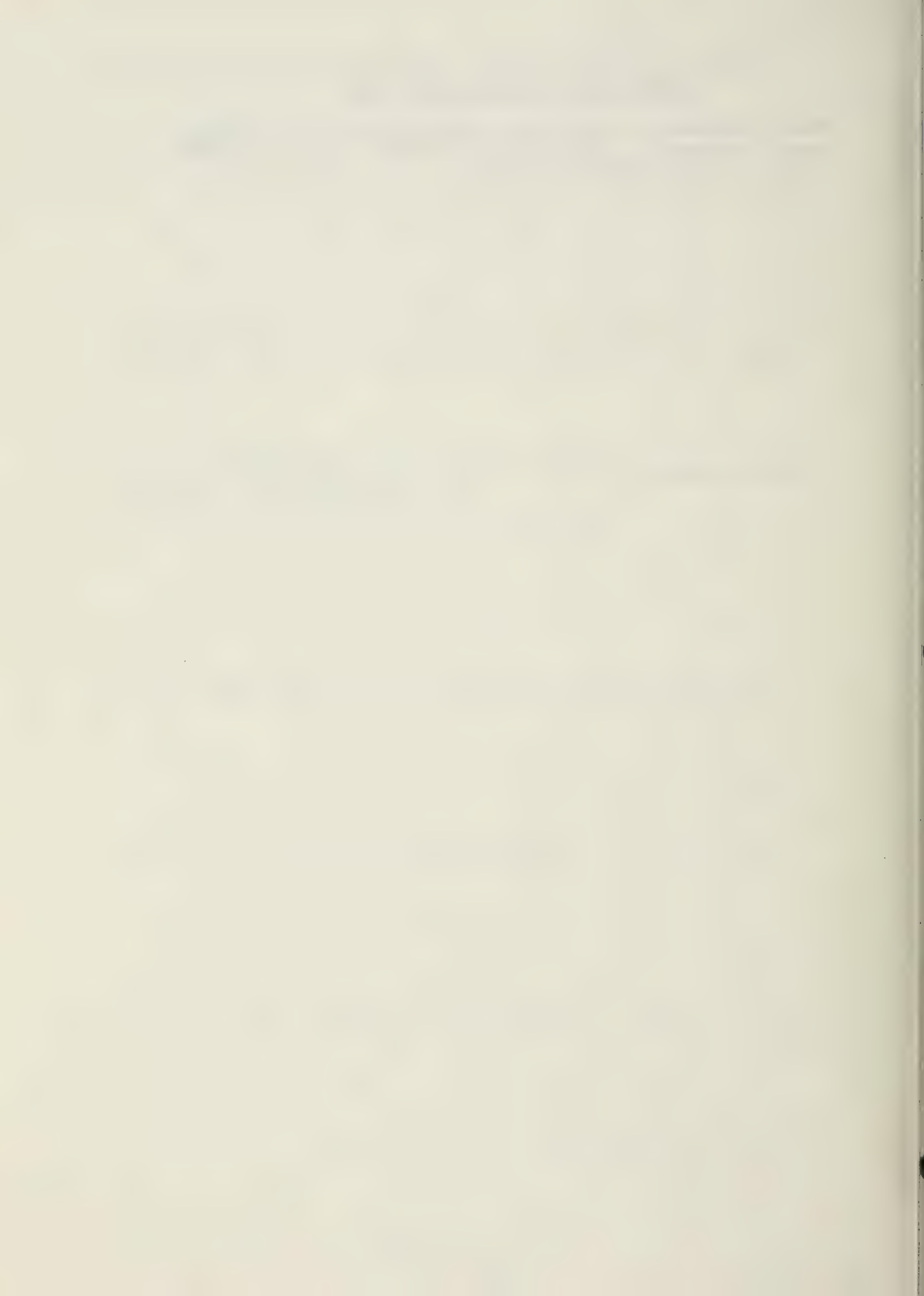
b. How would you modify your existing system hardware/software?

c. What data files would you like to access? _____

d. To what data files could you provide access? _____

INFORMATION ON THE CENTRAL PROCESSOR

Please provide your system description or define and diagram the central processor. Include access arrangements, port information, location, and owning/operating agency.



NAME: _____

ORGANIZATION: _____

COMPUTER SERVICES DIVISION AND OTHER HOST AGENCIES SHOW ONLY YOUR OWN PROJECTIONS. DO NOT DUPLICATE THE PROJECTIONS OF YOUR USERS.

DATA COMMUNICATIONS TASK FORCE FACILITIES PROJECT ESTIMATE 1981-1985

		Year				
Terminals	Type	1	2	3	4	5
I/O	_____	_____	_____	_____	_____	_____
Batch	_____	_____	_____	_____	_____	_____
Fax	_____	_____	_____	_____	_____	_____
Modems	_____	_____	_____	_____	_____	_____
Multiplexors	_____	_____	_____	_____	_____	_____
Concentrators	_____	_____	_____	_____	_____	_____
Circuits	<u>Dedicated</u>	_____	_____	_____	_____	_____
Circuits	<u>Dial-up</u>	_____	_____	_____	_____	_____
Processors	_____	_____	_____	_____	_____	_____
Users	_____	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____	_____

DATA COMMUNICATIONS TASK FORCE
FACILITIES PROJECTION ESTIMATE
1981-1985

ATTACHMENT SEVEN

<u>Terminals</u>	<u>Type</u>	<u>Year</u>				
		<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>
I/O		400	500	600	800	1000
Batch		25	30	40	50	60
Fax						
Modems		200	250	300	400	500
Multiplexors						
Concentrators		0	2	3	4	5
Circuits	Dedicated	50	60	70	80	90
Circuits	Dial-up	10	20	25	30	35
Processors		1	1	1	1	1
Users		40	45	50	55	60
Other	Message Switcher	1	2	2	3	4
Other						

These numbers are for all terminals attached to the Host at CSD.

DATA COMMUNICATIONS SAVINGS: BEST CASE

ATTACHMENT EIGHT

CURRENT EXPENDITURES:	<u>ANNUAL COST</u>	<u>TOTAL</u>
LINES, MODEMS, COMMUNICATION CONTROLLERS:	\$150,000	
TERMINAL LEASE COSTS:	<u>420,000</u>	
	TOTAL	\$670,000
EXPECTED LEVELS 1983:		
LINES, MODEMS, COMMUNICATION CONTROLLERS:	\$500,000	
TERMINAL LEASE COSTS:	<u>\$1,200,000</u>	
	TOTAL	\$2,370,000

ESTIMATED SAVINGS FROM LONG RANGE PLANNING:

30 - 40% OF TOTAL COST, OR

\$680,000 ONE TIME

SIMILAR PERCENTAGE SAVINGS, EACH YEAR FOLLOWING 1983: INCALCUABLE AT PRESENT

(PROTOCOL ISSUE RESOLUTION)

SOURCE: COMPUTER SERVICES DIVISION, D. of A.

